STATE OF NEW HAMPSHIRE
INTER-DEPARTMENT COMMUNICATION

DATE: October 27, 2021

FROM: Andrew O'Sullivan
Wetlands Program Manager

AT (OFFICE): Department of Transportation
Bureau of Environment

SUBJECT: Dredge & Fill Application
Dover 40042

TO: Karl Benedict, Public Works Permitting Officer
New Hampshire Wetlands Bureau
29 Hazen Drive, P.O. Box 95
Concord, NH 03302-0095

Forwarded herewith is the application package prepared by NH DOT Bureau of Turnpikes for the subject minor impact project. This project is classified as minor in Env-Wt 407.03(a)- Jurisdictional Area Size Thresholds. The project is located along the Spaulding Turnpike / NH Route 16 in the Town of Dover, NH. The proposed work proposes to rehabilitate 2 culverts off exit 9 on the Spaulding Turnpike crossing Indian Brook Drive. The project is needed due to flooding that occurs on the ramp causing a safety issue.

This project was reviewed at the Natural Resource Agency Coordination Meeting on September 15, 2021. A copy of the minutes has been included with this application package. A copy of this application and plans can be accessed on the Departments website via the following link: http://www.nh.gov/dot/org/projectdevelopment/environment/units/program-management/wetland-applications.htm.

NHDOT anticipates and request that this project be reviewed and permitted by the Army Corp of Engineers through the State Programmatic General Permit process. A copy of the application has been sent to the Army Corp of Engineers.

Mitigation is not required for the project.

The lead people to contact for this project are Emily Polychronopoulos, Bureau of Turnpikes (271-3668 or Emily.Polychronopoulos @dot.nh.gov) or Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment (271-0556 or Andrew.O'Sullivan@dot.nh.gov).

A payment voucher has been processed for this application (Voucher # 67752) in the amount of $2893.20

If and when this application meets with the approval of the Bureau, please send the permit directly to Andrew O'Sullivan, Wetlands Program Manager, Bureau of Environment.

AMO:amo
cc:
BOE Original
Town of Dover (4 copies via certified mail)
David Trubey, NH Division of Historic Resources (Cultural Review Within)
Carol Henderson, NH Fish & Game (via electronic notification)
Maria Tur, US Fish & Wildlife (via electronic notification)
Beth Alafat & Jeanie Brochi, US Environmental Protection Agency (via electronic notification)
Michael Hicks & Rick Kristoff, US Army Corp of Engineers (via electronic notification)
Kevin Nyhan, BOE (via electronic notification)

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STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION

Water Division/Land Resources Management
Wetlands Bureau

Check the Status of your Application

RSA/Rule: RSA 482-A/Env-Wt 100-900

APPLICANT'S NAME: NH Department of Transportation **TOWN NAME:** Dover

Administrative Use Only	Administrative Use Only	Administrative Use Only	File No.:
			Check No.:
			Amount:
			Initials:

A person may request a waiver of the requirements in Rules Env-Wt 100-900 to accommodate situations where strict adherence to the requirements would not be in the best interest of the public or the environment but is still in compliance with RSA 482-A. A person may also request a waiver of the standards for existing dwellings over water pursuant to RSA 482-A:26, III(b). For more information, please consult the Waiver Request Form.

SECTION 1 - REQUIRED PLANNING FOR ALL PROJECTS (Env-Wt 306.05; RSA 482-A:3, I(d)(2)) Please use the Wetland Permit Planning Tool (WPPT), the Natural Heritage Bureau (NHB) DataCheck Tool, the Aquatic Restoration Mapper, or other sources to assist in identifying key features such as: priority resource areas (PRAs), protected species or habitats, coastal areas, designated rivers, or designated prime wetlands.	
Has the required planning been completed?	☒ Yes ☐ No
Does the property contain a PRA? If yes, provide the following information:	☐ Yes ☒ No
• Does the project qualify for an Impact Classification Adjustment (e.g. NH Fish and Game Department (NHF&G) and NHB agreement for a classification downgrade) or a Project-Type Exception (e.g. Maintenance or Statutory Permit-by-Notification (SPN) project)? See Env-Wt 407.02 and Env-Wt 407.04.	☐ Yes ☐ No
• Protected species or habitat? ○ If yes, species or habitat name(s): ○ NHB Project ID #:	☐ Yes ☐ No
• Bog?	☐ Yes ☐ No
• Floodplain wetland contiguous to a tier 3 or higher watercourse?	☐ Yes ☐ No
• Designated prime wetland or duly-established 100-foot buffer?	☐ Yes ☐ No
• Sand dune, tidal wetland, tidal water, or undeveloped tidal buffer zone?	☐ Yes ☐ No
Is the property within a Designated River corridor? If yes, provide the following information: • Name of Local River Management Advisory Committee (LAC): • A copy of the application was sent to the LAC on Month: Day: Year:	☐ Yes ☒ No

For dredging projects, is the subject property contaminated? • If yes, list contaminant:	☐ Yes ☒ No
Is there potential to impact impaired waters, class A waters, or outstanding resource waters?	☐ Yes ☒ No
For stream crossing projects, provide watershed size (see WPPT or Stream Stats): N/A	

SECTION 2 - PROJECT DESCRIPTION (Env-Wt 311.04(i))

Provide a **brief** description of the project and the purpose of the project, outlining the scope of work to be performed and whether impacts are temporary or permanent. DO NOT reply "See attached"; please use the space provided below.

This project proposes to rehabilitate 2 culverts off exit 9 on the Spaulding Turnpike crossing Indian Brook Drive. The project is needed due to flooding that occurs on the ramp causing a safety issue. One culvert, labeled as SADES ID #73021, is the last pipe in an existing closed drainage system on the Turnpike. The other pipe, labeled as #73-XXX, is a cross culvert under Indian Brook Drive. Both culverts outlet on the northern side of Indian Brook Drive at the toe of slope along the wetland and are both buried within the slope. Culvert #73021 is a 862 foot long pipe which is clogged over more than half the length causing water to overflow the catch basin along the Turnpike off-ramp; additionally during the winter this overflow causes icy conditions on the ramp. This project is needed to alleviate this safety concern. The work includes excavating the outlets, cleaning out the culverts, and constructing outlet basins with headwalls. The outlet basins at each culvert will allow for water to flow properly as well as collect debris that would clog the outlet and then be regularly cleaned.

Permanent impacts are for construction of the stone outlet basins and access path. The access path built during the project will be maintained for future efforts to clean out debris. Temporary impacts are included for work area using timber mats, placement of dewatering pump during construction and installation of erosion control measures. Temporary impacts are included at the inlet of culvert #73-XXX to allow the contractor to remove debris as needed.

Additional work for cuvlert #73021 is to include constructing a manhole mid-way along the culvert and potential slip-lining after evaluation. This new manhole will allow for future maintenance and work to occur from the infield and not the outlet in the wetland.

SECTION 3 - PROJECT LOCATION

Separate wetland permit applications must be submitted for each municipality within which wetland impacts occur.

ADDRESS: Exit 9 off NH 16 / Indian Brook Drive

TOWN/CITY: Dover

TAX MAP/BLOCK/LOT/UNIT: DOT ROW

US GEOLOGICAL SURVEY (USGS) TOPO MAP WATERBODY NAME:
☒ N/A

(Optional) LATITUDE/LONGITUDE in decimal degrees (to five decimal places): 43.216822° North
-70.896644° West

SECTION 4 - APPLICANT (DESIRED PERMIT HOLDER) INFORMATION (Env-Wt 311.04(a)) If the applicant is a trust or a company, then complete with the trust or company information.		
NAME: NH Department of Transportation, John Corcoran		
MAILING ADDRESS: PO Box 2950		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: John.W.CorcoranJr@dot.nh.gov		
FAX:	PHONE: 603-485-3806	
ELECTRONIC COMMUNICATION: By initialing here: JWC, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 5 - AUTHORIZED AGENT INFORMATION (Env-Wt 311.04(c)) ☒ N/A		
LAST NAME, FIRST NAME, M.I.:		
COMPANY NAME:		
MAILING ADDRESS:		
TOWN/CITY:	STATE:	ZIP CODE:
EMAIL ADDRESS:		
FAX:	PHONE:	
ELECTRONIC COMMUNICATION: By initialing here JWC, I hereby authorize NHDES to communicate all matters relative to this application electronically.		
SECTION 6 - PROPERTY OWNER INFORMATION (IF DIFFERENT THAN APPLICANT) (Env-Wt 311.04(b)) If the owner is a trust or a company, then complete with the trust or company information. ☐ Same as applicant		
NAME: NH Department of Tansportation, Andy O'Sullivan		
MAILING ADDRESS: 7 Hazen Drive; PO Box 483		
TOWN/CITY: Concord	STATE: NH	ZIP CODE: 03302
EMAIL ADDRESS: Andrew.M.OSullivan@dot.nh.gov		
FAX: 271-7199	PHONE: 271-3226	
ELECTRONIC COMMUNICATION: By initialing here AMO, I hereby authorize NHDES to communicate all matters relative to this application electronically.		

SECTION 7 - RESOURCE-SPECIFIC CRITERIA ESTABLISHED IN Env-Wt 400, Env-Wt 500, Env-Wt 600, Env-Wt 700, OR Env-Wt 900 HAVE BEEN MET (Env-Wt 313.01(a)(3))

Describe how the resource-specific criteria have been met for each chapter listed above (please attach information about stream crossings, coastal resources, prime wetlands, or non-tidal wetlands and surface waters):

Env-Wt 400: Wetlands delineated and classified in accordance with US Army Corp of Engineers 1987 delineation manual by Terry Ramborger on October 27/28, 2020 and Tom Touchet on April 28, 2021. Wetland 1A is classified as a Palustrine Emergent Persistent (PEM1), wetland 1B is classified as a PEM1/ Palustrine Forested Broad-Leaved Deciduous (PFO1) and wetland 2C is classified as a PFO1.

Env-Wt 500: Env-Wt 527 construction and maintenance projects for public highways

Env-Wt 600: N/A, no work in tidal or coastal wetlands

Env-Wt 700: N/A, no work in prime wetlands

Env-Wt 900: N/A, No stream impacts

SECTION 8 - AVOIDANCE AND MINIMIZATION

Impacts within wetland jurisdiction must be avoided to the maximum extent practicable (Env-Wt 313.03(a)).* Any project with unavoidable jurisdictional impacts must then be minimized as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization and the Wetlands Permitting: Avoidance, Minimization and Mitigation Fact Sheet. For minor or major projects, a functional assessment of all wetlands on the project site is required (Env-Wt 311.03(b)(10)).*

Please refer to the application checklist to ensure you have attached all documents related to avoidance and minimization, as well as functional assessment (where applicable). Use the Avoidance and Minimization Checklist, the Avoidance and Minimization Narrative, or your own avoidance and minimization narrative.

**See Env-Wt 311.03(b)(6) and Env-Wt 311.03(b)(10) for shoreline structure exemptions.*

SECTION 9 - MITIGATION REQUIREMENT (Env-Wt 311.02)

If unavoidable jurisdictional impacts require mitigation, a mitigation pre-application meeting must occur at least 30 days but not more than 90 days prior to submitting this Standard Dredge and Fill Permit Application.

Mitigation Pre-Application Meeting Date: Month: 9 Day: 15 Year: 2021

(☒ N/A - Mitigation is not required)

SECTION 10 - THE PROJECT MEETS COMPENSATORY MITIGATION REQUIREMENTS (Env-Wt 313.01(a)(1)c)

Confirm that you have submitted a compensatory mitigation proposal that meets the requirements of Env-Wt 800 for all permanent unavoidable impacts that will remain after avoidance and minimization techniques have been exercised to the maximum extent practicable: ☐ I confirm submittal.

(☒ N/A – Compensatory mitigation is not required)

SECTION 11 - IMPACT AREA (Env-Wt 311.04(g))

For each jurisdictional area that will be/has been impacted, provide square feet (SF) and, if applicable, linear feet (LF) of impact, and note whether the impact is after-the-fact (ATF; i.e., work was started or completed without a permit).

For intermittent and ephemeral streams, the linear footage of impact is measured along the thread of the channel. *Please note, installation of a stream crossing in an ephemeral stream may be undertaken without a permit per Rule Env-Wt 309.02(d), however other dredge or fill impacts should be included below.*

For perennial streams/rivers, the linear footage of impact is calculated by summing the lengths of disturbances to the channel and banks.

Permanent impacts are impacts that will remain after the project is complete (e.g., changes in grade or surface materials).

Temporary impacts are impacts not intended to remain (and will be restored to pre-construction conditions) after the project is completed.

JURISDICTIONAL AREA		PERMANENT			TEMPORARY		
		SF	LF	ATF	SF	LF	ATF
Wetlands	Forested Wetland	676		☐	3570		☐
	Scrub-shrub Wetland			☐			☐
	Emergent Wetland	928		☐	2059		☐
	Wet Meadow			☐			☐
	Vernal Pool			☐			☐
	Designated Prime Wetland			☐			☐
	Duly-established 100-foot Prime Wetland Buffer			☐			☐
Surface Water	Intermittent / Ephemeral Stream			☐			☐
	Perennial Stream or River			☐			☐
	Lake / Pond			☐			☐
	Docking - Lake / Pond			☐			☐
	Docking - River			☐			☐
Banks	Bank - Intermittent Stream			☐			☐
	Bank - Perennial Stream / River			☐			☐
	Bank / Shoreline - Lake / Pond			☐			☐
Tidal	Tidal Waters			☐			☐
	Tidal Marsh			☐			☐
	Sand Dune			☐			☐
	Undeveloped Tidal Buffer Zone (TBZ)			☐			☐
	Previously-developed TBZ			☐			☐
	Docking - Tidal Water			☐			☐
TOTAL		1604			**5629**		

SECTION 12 - APPLICATION FEE (RSA 482-A:3, I)

☐ **MINIMUM IMPACT FEE**: Flat fee of $400.

☐ **NON-ENFORCEMENT RELATED, PUBLICLY-FUNDED AND SUPERVISED RESTORATION PROJECTS, REGARDLESS OF IMPACT CLASSIFICATION:** Flat fee of $400 (refer to RSA 482-A:3, 1(c) for restrictions).

☒ **MINOR OR MAJOR IMPACT FEE:** Calculate using the table below:

Permanent and temporary (non-docking):	7233 SF	× $0.40 =	$	2893.20
Seasonal docking structure:	SF	× $2.00 =	$	
Permanent docking structure:	SF	× $4.00 =	$	
Projects proposing shoreline structures (including docks) add $400 =			$	
		Total =	$	2893.20

The application fee for minor or major impact is the above calculated total or $400, whichever is greater =	$ 2893.20

SECTION 13 - PROJECT CLASSIFICATION (Env-Wt 306.05)

Indicate the project classification.

☐ Minimum Impact Project	☒ Minor Project	☐ Major Project

SECTION 14 - REQUIRED CERTIFICATIONS (Env-Wt 311.11)

Initial each box below to certify:

Initials: JWC	To the best of the signer's knowledge and belief, all required notifications have been provided.
Initials: JWC	The information submitted on or with the application is true, complete, and not misleading to the best of the signer's knowledge and belief.
Initials: JWC	The signer understands that: • The submission of false, incomplete, or misleading information constitutes grounds for NHDES to: 1. Deny the application. 2. Revoke any approval that is granted based on the information. 3. If the signer is a certified wetland scientist, licensed surveyor, or professional engineer licensed to practice in New Hampshire, refer the matter to the joint board of licensure and certification established by RSA 310-A:1. • The signer is subject to the penalties specified in New Hampshire law for falsification in official matters, currently RSA 641. • The signature shall constitute authorization for the municipal conservation commission and the Department to inspect the site of the proposed project, except for minimum impact forestry SPN projects and minimum impact trail projects, where the signature shall authorize only the Department to inspect the site pursuant to RSA 482-A:6, II.
Initials: JWC	If the applicant is not the owner of the property, each property owner signature shall constitute certification by the signer that he or she is aware of the application being filed and does not object to the filing.

SECTION 15 - REQUIRED SIGNATURES (Env-Wt 311.04(d); Env-Wt 311.11)

SIGNATURE (OWNER):	PRINT NAME LEGIBLY: John Corcoran	DATE: 10/26/21
SIGNATURE (APPLICANT, IF DIFFERENT FROM OWNER):	PRINT NAME LEGIBLY:	DATE:
SIGNATURE (AGENT, IF APPLICABLE):	PRINT NAME LEGIBLY:	DATE:

SECTION 16 - TOWN / CITY CLERK SIGNATURE (Env-Wt 311.04(f))

As required by RSA 482-A:3, I(a)(1), I hereby certify that the applicant has filed four application forms, four detailed plans, and four USGS location maps with the town/city indicated below.

TOWN/CITY CLERK SIGNATURE:	PRINT NAME LEGIBLY: Exempt, State Agency per RSA 482-A:31(a)(1)

TOWN/CITY:	DATE:

DIRECTIONS FOR TOWN/CITY CLERK:
Per RSA 482-A:3, I(a)(1)

1. IMMEDIATELY sign the original application form and four copies in the signature space provided above.
2. Return the signed original application form and attachments to the applicant so that the applicant may submit the application form and attachments to NHDES by mail or hand delivery.
3. IMMEDIATELY distribute a copy of the application with one complete set of attachments to each of the following bodies: the municipal Conservation Commission, the local governing body (Board of Selectmen or Town/City Council), and the Planning Board.
4. Retain one copy of the application form and one complete set of attachments and make them reasonably accessible for public review.

DIRECTIONS FOR APPLICANT:
Submit the original permit application form bearing the signature of the Town/City Clerk, additional materials, and the application fee to NHDES by mail or hand delivery at the address at the bottom of this page. Make check or money order payable to “Treasurer – State of NH”.

Keep this checklist for your reference; do not submit with your application.

APPLICATION CHECKLIST

Unless specified, all items below are required. Failure to provide the required items will delay a decision on your project and may result in denial of your application. Please reference statute RSA 482-A, Fill and Dredge in Wetlands, and the Wetland Rules Env-Wt 100-900.

- ☒ The completed, dated, signed, and certified application (Env-Wt 311.03(b)(1)).
- ☒ Correct fee as determined in RSA 482-A:3, I(b) or (c), subject to any cap established by RSA 482-A:3, X (Env-Wt 311.03(b)(2)). Make check or money order payable to "Treasurer – State of NH".
- ☒ The Required Planning actions required by Env-Wt 311.01(a)-(c) and Env-Wt 311.03(b)(3).
- ☒ US Army Corps of Engineers (ACE) "Appendix B, New Hampshire General Permits (GPs), Required Information and Corps Secondary Impacts Checklist" and its required attachments (Env-Wt 307.02). This includes the US Fish and Wildlife Service IPAC review and Section 106 Historic/Archaeological Resource review.
- ☒ Project plans described in Env-Wt 311.05 (Env-Wt 311.03(b)(4)).
- ☒ Maps, or electronic shape files and meta data, and other attachments specified in Env-Wt 311.06 (Env-Wt 311.03(b)(5)).
- ☒ Explanation of the methods, timing, and manner as to how the project will meet standard permit conditions required in Env-Wt 307 (Env-Wt 311.03(b)(7)).
- ☐ If applicable, the information regarding proposed compensatory mitigation specified in Env-Wt 311.08 and Chapter Env-Wt 800 - Permittee Responsible Mitigation Project Worksheet, unless not required under Env-Wt 313.04 (Env-Wt 311.03(b)(8); Env-Wt 311.08; Env-Wt 313.04).
- ☒ Any additional information specific to the **type of resource** as specified in Env-Wt 311.09 (Env-Wt 311.03(b)(9); Env-Wt 311.04(j)).
- ☐ Project specific information required by Env-Wt 500, Env-Wt 600, and Env-Wt 900 (Env-Wt 311.03(b)(11)).
- ☐ A list containing the name, mailing address and tax map/lot number of each abutter to the subject property (Env-Wt 311.03(b)(12)).
- ☒ Copies of certified postal receipts or other proof of receipt of the notices that are required by RSA 482-A:3, I(d) (Env-Wt 311.03(b)(13)).
- ☒ Project design considerations required by Env-Wt 313 (Env-Wt 311.04(j)).
- ☐ Town tax map showing the subject property, the location of the project on the property, and the location of properties of abutters with each lot labeled with the name and mailing address of the abutter (Env-Wt 311.06(a)).
- ☒ Dated and labeled color photographs that:
  - (1) Clearly depict:
    - a. All jurisdictional areas, including but not limited to portions of wetland, shoreline, or surface water where impacts have or are proposed to occur.
    - b. All existing shoreline structures.
  - (2) Are mounted or printed no more than 2 per sheet on 8.5 x 11 inch sheets (Env-Wt 311.06(b)).
- ☒ A copy of the appropriate US Geological Survey map or updated data based on LiDAR at a scale of one inch equals 2,000 feet showing the location of the subject property and proposed project (Env-Wt 311.06(c)).
- ☒ A narrative that describes the work sequence, including pre-construction through post-construction, and the relative timing and progression of all work (Env-Wt 311.06(d)).

- ☐ For all projects in the protected tidal zone, a copy of the recorded deed with book and page numbers for the property (Env-Wt 311.06(e)).
- ☐ If the applicant is not the owner in fee of the subject property, documentation of the applicant's legal interest in the subject property, provided that for utility projects in a utility corridor, such documentation may comprise a list that:
  - (1) Identifies the county registry of deeds and book and page numbers of all of the easements or other recorded instruments that provide the necessary legal interest; and
  - (2) Has been certified as complete and accurate by a knowledgeable representative of the applicant (Env-Wt 311.06(f)).
- ☒ The NHB memo containing the NHB identification number and results as well as any written follow-up communications such as additional memos or email communications with either NHB or NHF&G (Env-Wt 311.06(g)). See Wetlands Permitting: Protected Species and Habitat Fact Sheet.
- ☒ A statement of whether the applicant has received comments from the local conservation commission and, if so, how the applicant has addressed the comments (Env-Wt 311.06(h)).
- ☐ For projects in LAC jurisdiction, a statement of whether the applicant has received comments from the LAC and, if so, how the applicant has addressed the comments (Env-Wt 311.06(i)).
- ☒ If the applicant is also seeking to be covered by the state general permits, a statement of whether comments have been received from any federal agency and, if so, how the applicant has addressed the comments (Env-Wt 311.06(j)).
- ☒ Avoidance and Minimization Written Narrative or the Avoidance and Minimization Checklist, or your own avoidance and minimization narrative (Env-Wt 311.07).
- ☐ For after-the-fact applications: information required by Env-Wt 311.12.
- ☐ Coastal Resource Worksheet for coastal projects as required under Env-Wt 600.
- ☐ Prime Wetlands information required under Env-Wt 700. See WPPT for prime wetland mapping.

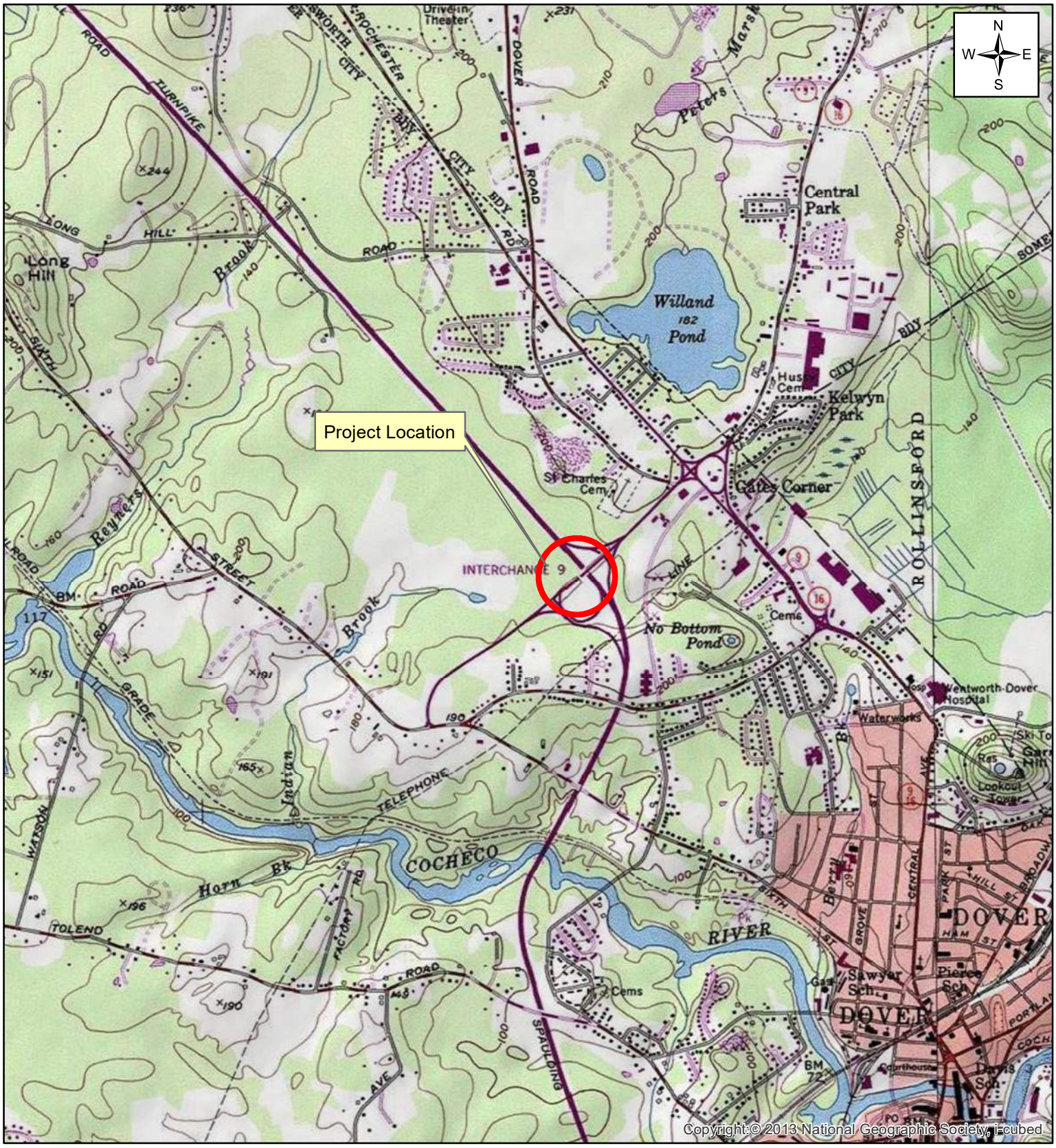
Required Attachments for Minor and Major Projects

- ☒ Attachment A: Minor and Major Projects (Env-Wt 313.03).
- ☒ Functional Assessment Worksheet or others means of documenting the results of actions required by Env-Wt 311.10 as part of an application preparation for a standard permit (Env-Wt 311.03(b)(3); Env-Wt 311.03(b)(10)). See Functional Assessments for Wetlands and Other Aquatic Resources Fact Sheet. For shoreline structures, see shoreline structures exemption in Env-Wt 311.03(b)(10)).

Optional Materials

- ☐ Stream Crossing Worksheet which summarizes the requirements for stream crossings under Env-Wt 900.
- ☐ Request for concurrent processing of related shoreland / wetlands permit applications (Env-Wt 313.05).

Statewide, Project #40042



0 0.5 1 Miles

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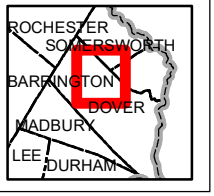
Map depicting Porject #40042 for drainage improvements at Exit 9 of NH-16 / Indian Brook Drive Intrechange in Dover.

Map created by: Arin Mills on 8/30/2021

Source: S:\Environment\PROJECTS\STATEWIDE\40042

New Hampshire DOT Department of Transportation



STANDARD DREDGE AND FILL WETLANDS PERMIT APPLICATION ATTACHMENT A: MINOR AND MAJOR PROJECTS

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.10; Env-Wt 313.01(a)(1); Env-Wt 313.03

APPLICANT'S NAME: **NH Department of Transportation** **TOWN NAME:** Dover

Attachment A is required for *all minor and major projects*, and must be completed *in addition* to the Avoidance and Minimization Narrative or Checklist that is required by Env-Wt 307.11.

For projects involving construction or modification of non-tidal shoreline structures over areas of surface waters having an absence of wetland vegetation, only Sections I.X through I.XV are required to be completed.

PART I: AVOIDANCE AND MINIMIZATION

In accordance with Env-Wt 313.03(a), the Department shall not approve any alteration of any jurisdictional area unless the applicant demonstrates that the potential impacts to jurisdictional areas have been avoided to the maximum extent practicable and that any unavoidable impacts have been minimized, as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization.

SECTION I.I - ALTERNATIVES (Env-Wt 313.03(b)(1))

Describe how there is no practicable alternative that would have a less adverse impact on the area and environments under the Department's jurisdiction.

THERE ARE NO PRACTICABLE ALTERNATIVES DUE TO THE LOCATION OF THE EXISTING PIPES AND DEPTH BELOW THE ROADWAY. THE PIPES OUTLET INTO THE EXISTING WETLAND AND ARE SUBMERGED BELOW THE WATER LINE. CONSTRUCTION OF THE OUTLET BASINS WILL ALLOW DEBRIS TO BE SETTLED OUT AND REMOVED THROUGH REGULAR MAINTENENCE. A PORTION OF THE GRAVEL ACCESS PATH WILL RESULT IN PERMANENT IMPACTS TO ALLOW FOR FUTURE ACCESS OF THE BASIN FOR CLEANING WITHOUT ADDITIONAL IMPACTS TO JURISDICTIONAL WETLANDS. TEMPORARY IMPACTS HAVE BEEN LIMITED TO AREA REQUIRED FOR CONSTRUCTION ACCESS AND INSTALLATION OF EROSION CONTOL MEASURES DURING CONSTRUCTION, AS WELL AS PLACEMEMENT OF DEWATERING PUMP DURING CONSTRUCTION.

SECTION I.II - MARSHES (Env-Wt 313.03(b)(2))

Describe how the project avoids and minimizes impacts to tidal marshes and non-tidal marshes where documented to provide sources of nutrients for finfish, crustacean, shellfish, and wildlife of significant value.

The project minimizes impacts by constructing an outlet basin to the existing drainage pipe to allow for debris to be captured and removed. Impacts for construciton of the portion of the gravel access path will allow the new basins to be maintained and cleaned without additional impacts to the wetlands. The impacts to non-tidal marsh are necessary to allow the existing culvert to drain as well as maintain.

SECTION I.III - HYDROLOGIC CONNECTION (Env-Wt 313.03(b)(3))

Describe how the project maintains hydrologic connections between adjacent wetland or stream systems.

There are no streams in this project area and it does not change the hydrologic connection between wetlands. Where there are wetlands the work only includes improving the outlet and cleaning culverts, there is no relocation or change the hydrology to each culvert.

SECTION I.IV - JURISDICTIONAL IMPACTS (Env-Wt 313.03(b)(4))

Describe how the project avoids and minimizes impacts to wetlands and other areas of jurisdiction under RSA 482-A, especially those in which there are exemplary natural communities, vernal pools, protected species and habitat, documented fisheries, and habitat and reproduction areas for species of concern, or any combination thereof.

The project is only constructing what is required to maintain and improve flow thorugh an existing drainage system. The existing outlet is already at the limits of the current wetland and needs to be cleaned out and the new outlet basin to function properly. No documented exemplary natural communities, vernal pools, protected species or habitat, documented fisheries and habitat and reproduction area for species of concern are known to occur within the construction area.

SECTION I.V - PUBLIC COMMERCE, NAVIGATION, OR RECREATION (Env-Wt 313.03(b)(5))

Describe how the project avoids and minimizes impacts that eliminate, depreciate or obstruct public commerce, navigation, or recreation.

This project does not impact public commerce, navigation or recreation. No public recreation areas occur in or adjacent to the project area.

SECTION I.VI - FLOODPLAIN WETLANDS (Env-Wt 313.03(b)(6))

Describe how the project avoids and minimizes impacts to floodplain wetlands that provide flood storage.

The project does not impact floodplains. No FEMA floodplain in project area.

SECTION I.VII - RIVERINE FORESTED WETLAND SYSTEMS AND SCRUB-SHRUB – MARSH COMPLEXES (Env-Wt 313.03(b)(7))

Describe how the project avoids and minimizes impacts to natural riverine forested wetland systems and scrub-shrub – marsh complexes of high ecological integrity.

No riverinine forested wetland system or scrub-shrub-marsh complex of high ecological integrity exist within the project area.

SECTION I.VIII - DRINKING WATER SUPPLY AND GROUNDWATER AQUIFER LEVELS (Env-Wt 313.03(b)(8))

Describe how the project avoids and minimizes impacts to wetlands that would be detrimental to adjacent drinking water supply and groundwater aquifer levels.

No impacts to adjacent drinking water supply or groundwater aquifer levels are anticipated with the project.

SECTION I.IX - STREAM CHANNELS (Env-Wt 313.03(b)(9))

Describe how the project avoids and minimizes adverse impacts to stream channels and the ability of such channels to handle runoff of waters.

The project area does not include any streams.

SECTION I.X - SHORELINE STRUCTURES - CONSTRUCTION SURFACE AREA (Env-Wt 313.03(c)(1))

Describe how the project has been designed to use the minimum construction surface area over surface waters necessary to meet the stated purpose of the structures.

No shoreline structures are proposed

SECTION I.XI - SHORELINE STRUCTURES - LEAST INTRUSIVE UPON PUBLIC TRUST (Env-Wt 313.03(c)(2))

Describe how the type of construction proposed is the least intrusive upon the public trust that will ensure safe docking on the frontage.

No shoreline structures are proposed

SECTION I.XII - SHORELINE STRUCTURES – ABUTTING PROPERTIES (Env-Wt 313.03(c)(3))

Describe how the structures have been designed to avoid and minimize impacts on ability of abutting owners to use and enjoy their properties.

No shoreline structures are proposed

SECTION I.XIII - SHORELINE STRUCTURES – COMMERCE AND RECREATION (Env-Wt 313.03(c)(4))

Describe how the structures have been designed to avoid and minimize impacts to the public's right to navigation, passage, and use of the resource for commerce and recreation.

No shoreline structures are proposed

SECTION I.XIV - SHORELINE STRUCTURES – WATER QUALITY, AQUATIC VEGETATION, WILDLIFE AND FINFISH HABITAT (Env-Wt 313.03(c)(5))

Describe how the structures have been designed, located, and configured to avoid impacts to water quality, aquatic vegetation, and wildlife and finfish habitat.

No shoreline structures are proposed

SECTION I.XV - SHORELINE STRUCTURES – VEGETATION REMOVAL, ACCESS POINTS, AND SHORELINE STABILITY (Env-Wt 313.03(c)(6))

Describe how the structures have been designed to avoid and minimize the removal of vegetation, the number of access points through wetlands or over the bank, and activities that may have an adverse effect on shoreline stability.

No shoreline structures are proposed

PART II: FUNCTIONAL ASSESSMENT
REQUIREMENTS Ensure that project meets the requirements of Env-Wt 311.10 regarding functional assessment (Env-Wt 311.04(j); Env-Wt 311.10).
FUNCTIONAL ASSESSMENT METHOD USED: US Army Corp of Engineers Highway Methology
NAME OF CERTIFIED WETLAND SCIENTIST (FOR NON-TIDAL PROJECTS) OR QUALIFIED COASTAL PROFESSIONAL (FOR TIDAL PROJECTS) WHO COMPLETED THE ASSESSMENT: ARIN MILLS
DATE OF ASSESSMENT: 10/4/2021
Check this box to confirm that the application includes a NARRATIVE ON FUNCTIONAL ASSESSMENT: ☒
For minor or major projects requiring a standard permit without mitigation, the applicant shall submit a wetland evaluation report that includes completed checklists and information demonstrating the RELATIVE FUNCTIONS AND VALUES OF EACH WETLAND EVALUATED. Check this box to confirm that the application includes this information, if applicable: ☒ Note: The Wetlands Functional Assessment worksheet can be used to compile the information needed to meet functional assessment requirements.

AVOIDANCE AND MINIMIZATION WRITTEN NARRATIVE

Water Division/Land Resources Management

Wetlands Bureau

Check the Status of your Application

RSA/ Rule: RSA 482-A/ Env-Wt 311.04(j); Env-Wt 311.07; Env-Wt 313.01(a)(1)b; Env-Wt 313.01(c)

APPLICANT'S NAME: NH Department of Transportation **TOWN NAME:** Dover

An applicant for a standard permit shall submit with the permit application a written narrative that explains how all impacts to functions and values of all jurisdictional areas have been avoided and minimized to the maximum extent practicable. This attachment can be used to guide the narrative (attach additional pages if needed). Alternatively, the applicant may attach a completed Avoidance and Minimization Checklist (NHDES-W-06-050) to the permit application.

SECTION 1 - WATER ACCESS STRUCTURES (Env-Wt 311.07(b)(1))

Is the primary purpose of the proposed project to construct a water access structure?

No the primary purpose of the project is to clean out an existing pipe and improve the outlet to allow for proper function of the existing sytem.

SECTION 2 - BUILDABLE LOT (Env-Wt 311.07(b)(1))

Does the proposed project require access through wetlands to reach a buildable lot or portion thereof?

No, the proposed project does not require access through the wetland to reach a buildable lot or portion thereof.

SECTION 3 - AVAILABLE PROPERTY (Env-Wt 311.07(b)(2))*

For any project that proposes permanent impacts of more than one acre, or that proposes permanent impacts to a PRA, or both, are any other properties reasonably available to the applicant, whether already owned or controlled by the applicant or not, that could be used to achieve the project's purpose without altering the functions and values of any jurisdictional area, in particular wetlands, streams, and PRAs?

**Except as provided in any project-specific criteria and except for NH Department of Transportation projects that qualify for a categorical exclusion under the National Environmental Policy Act.*

This project does not propose permanent impacts of more than one acre or to a PRA. The WPPT predicted a peatland in/adjacent to the project area. An evaluation of the wetland was conducted by a CWS and determined the impat area is not classified as a 'bog', and therfore not a PRA. A report is included in the application.

SECTION 4 - ALTERNATIVES (Env-Wt 311.07(b)(3))

Could alternative designs or techniques, such as different layouts, different construction sequencing, or alternative technologies be used to avoid impacts to jurisdictional areas or their functions and values as described in the Wetlands Best Management Practice Techniques For Avoidance and Minimization?

There are no other feasible alternatives to avoid wetland impacts. The existing culvert is connected to an existing closed drainage system and currently outlets at the edge of the wetland. The cuvlert has a flat slope which does not allow the end of the cuvlert to be relocated up the roadway slope. The wetland follows along a large portion of the roadway as well so it cannot be relocated along the road without impacts.

The construction sequence and erosion control plan included demonstate that protection of wetland resources will be maintained throughout construction, through final site stabilization.

SECTION 5 - CONFORMANCE WITH Env-Wt 311.10(c) (Env-Wt 311.07(b)(4))**

How does the project conform to Env-Wt 311.10(c)?

***Except for projects solely limited to construction or modification of non-tidal shoreline structures only need to complete relevant sections of Attachment A*.

The proposed project has been designed to have the least impact on the wetlands functions. The outlet basin will improve the function of the wetland by retaining debris and sediment from the closed drainage system, allowing it to be regularly cleaned and maintained. A wetland function-value evaluation was completed and included in the application.

BUREAU OF ENVIRONMENT
CONFERENCE REPORT

SUBJECT: NHDOT Monthly Natural Resource Agency Coordination Meeting
DATE OF CONFERENCE: September 15, 2021
LOCATION OF CONFERENCE: Virtual meeting held via Zoom

ATTENDED BY:

NHDOT
Andrew O'Sullivan
Matt Urban
Rebecca Martin
Arin Mills
Ron Crickard
Mike Dugas
Wendy Johnson
Shelly Winters
Emily Polychronopolous
Sam Newsom
Chris Carucci
Kerry Ryan
Tim Boodey
Joseph Jorgens

ACOE
Absent

EPA
Jeanie Brochi

NHDES
Lori Sommer
Karl Benedict

NHB
Jessica Bouchard

NH Fish & Game
Carol Henderson

Federal Highway
Jaimie Sikora

The Nature Conservancy
Pete Steckler

Consultants/ Public Participants
Christine Perron
Julia Sterns
Kien Ho
Tyler DeRuiter
Jay Doyle
John Bruneau
Jen Riordan
Meg Gordon

PRESENTATIONS/ PROJECTS REVIEWED THIS MONTH: *(minutes on subsequent pages)*

Jessica – NHB
No Response.

Pete – TNC
No comments.

Ron Crickard – NHDOT Bureau of Environment.
Because we're changing the scope, we should update the documents, touch base with Jillian Edelman of Cultural Resources with new areas, wetlands and floodplain impacts will need to be addressed in NEPA documents and permitted as required.

Dover Drainage Repair 40042 (Non-federal)
Arin Mills and Emily Polychronopoulos from NHDOT presented the Dover drainage repair project, a state funded project under the Bureau of Turnpikes. Arin said the statewide project also includes drainage repairs in Merrimack which have no wetlands impacts. The work includes repairs to existing drainage locations and installation of stone lined outlet basins. A map was shown with the National Wetlands Inventory data to show drainage from these pipes leads in to the large wetland complex which further flows into Indian Brook and eventually to the Cochecho River. Original 1979 construction plans were shown, with potential for additional work to the pipes possibly done in 1980's. Photos were shown of the existing conditions pipe inlet/outlet for both #73021 and 73-xxx.
Emily described the project as repairs to existing pipes to address back-up of water on the ramp roadway from a clogged pipe, resulting in safety concerns. Pipe #73021 is clogged, and the project will remove debris and install an intermediate manhole midway to allow for future cleaning and maintenance from outside the wetland. Pipe #73-xxx was located and identified during the field investigation, and the outlet is submerged. Pipe #73021 is approx. 860' long and collects water from the Turnpike closed drainage system. Once debris is removed both pipes will be evaluated for the slip lining and repair as needed. Both pipes propose a stone lined outlet basin with headwalls, while construction of a single access road will allow both pipes to be accessed and maintained.
Wetland impact plans were shown for installation of the outlet basins and access to conduct the work. Permanent wetlands impacts for pipe #73021 are anticipated for basin construction and installation of a portion of the access road that will be used for future maintenance of the structure. Permanent impacts for basin 73-xxx are for basin construction and temporary impacts for access. The existing drainage pipes will remain as they are deep beneath the roadway bed. The outlet basin will allow for sediment to collect and regular maintenance and cleaning can be conducted. Emily provided a basic overview of the construction sequence to include installation of erosion control measures, access road construction, dewater outlet, clean out pipe and construct outlet basin. Once the pipe is constructed it will be determined if the pipe is compromised and if a slip-line is necessary. Once work is complete the disturbed areas will be spread with humus and reseeded, and erosion control measures will be removed once established.
Arin provided an overview of the environmental resources to include no Designated river or FEMA floodplain, no previous permits identified, no conservation lands adjacent and no contamination identified via OneStop or field review. NHB21-1489 determined although species

identified no impacts are anticipated. Arin mentioned another review was recently conducted due to the change in project type classification, and results are pending. Northern long-eared bat was determined consistent with the 4(d) rule, and cultural review is underway. The GIS data determined a potential for peatlands/bog, a potential Priority Resource Area (PRA), and a field review determined the impact areas do not have soils and/or vegetation consistent with a bog and therefore is not considered a PRA. Invasive species, mainly Phragmites, will utilize the DOT invasive species BMP's to control this Type II invasive species.
Karl B. asked if there is potential for relocation of the outlets and Emily stated relocation was not considered due to the depth of the pipe below the roadway and the existing nearly flat slope of the pipe. Karl further asked how the proposed outlet basin would be maintained, once constructed, and at what interval. Emily said maintenance staff would likely check the outlet yearly to assess for needed maintenance. The access road would be constructed and maintained to allow for future maintenance and cleaning of the structure, and equipment could conduct necessary cleaning without requiring equipment in the wetland. Karl further asked restoration and maintenance with regards to invasive species would be managed and asked ensure temporary and permanent impacts be reviewed. Karl further asked for details on access in wetland area as well as restoration of muck containing invasive species; to which it was clarified removal of muck will only occur in the outlet basin permanent impacts. Lastly Karl asked for verification of the resources identified and potential for USGS stream. Arin confirmed no USGS stream is identified in this area.
Lorie S said so long as impacts remain under 10,000 sf so no mitigation is required. Carol H noted the NHB results determined no impacts noted. Genie, Jessica and Pete had no comments.

Bedford #43138 (X-A005(049))
Chris Carucci, NHDOT Highway Design, gave an overview of the proposed federally funded culvert rehabilitation project. The proposed AD date is March 8, 2022, with construction anticipated in the summer of 2022.

The culvert carries Bowman Brook under NH Route 114, approximately 475' north of New Boston Road, and is a Tier 3 crossing. The existing culvert is a 72" diameter x 119' long corrugated metal pipe constructed in 1965. Slope is about 0.8% and both ends have mortared stone headwalls. Embankment fill height is about 21'. The culvert is in poor condition with heavy rust and perforations along the invert. Sections of missing invert near the inlet are causing sinkholes behind the inlet headwall. The inlet and outlet headwalls need minor repairs. There was no perch at the inlet or outlet of the 72" cmp.

The inlet area is a large ponded wetland with significant storage. There is also a ponded area at the outlet, about 30' wide at the widest point and about 75' long. Depth near the culvert outlet is about 3'. At 75' downstream, there is a constriction and the channel changes. The outlet pool and constriction are shown on the original construction plans. The next two structures downstream are an 8' wide stone and concrete box culvert and then a 72" concrete pipe under New Boston Rd.

NHDOT District 5 Maintenance reports no history of flooding related to the 72" cmp culvert. Bowman Brook was reviewed by NHDOT Bureau of Environment on 6/4/2021. Bankfull widths were measured at 4 points downstream of the 72" cmp, with an average bankfull width of 18'. A full stream assessment was completed by Normandeau Associates in the same area in 2013 for

Wetland Function-Value Evaluation Form

Total area of wetland 80 ac Human made? N Is wetland part of a wildlife corridor? No or a "habitat island"? N

Adjacent land use mixed developed/undeveloped Distance to nearest roadway or other development adjacent

Dominant wetland systems present PEM1/PFO1 Contiguous undeveloped buffer zone present No

Is the wetland a separate hydraulic system? No If not, where does the wetland lie in the drainage basin? middle

How many tributaries contribute to the wetland? 0, head of Indian Brook Wildlife & vegetation diversity/abundance (see attached list)

Wetland I.D. 1A, 1B, 2C

Latitude 43.216941 Longitude -70.896606

Prepared by: Arin Mills Date 10/4/2021

Wetland Impact:
Type PEM1/PFO1 Area 7,233 sf

Evaluation based on:
Office X Field X

Corps manual wetland delineation completed? Y X N

Function/Value	Suitability Y / N	Rationale (Reference #)*	Principal Function(s)/Value(s)	Comments
Groundwater Recharge/Discharge	Y	1, 2, 5, 15	N	wetland leads into Indian Brook, deep mucky soils, likely accepts storm-water runoff from surrounding land
Floodflow Alteration	Y	1, 4, 5, 6, 7, 8, 9, 11, 12, 17, 18	Y	part of large wetland complex within Cocheco watershed, watershed has high areas of development, wetland outlets into Indian Brook
Fish and Shellfish Habitat	N	1, 2	N	wetland feeds Indian Brook, no watercourse within upper portion of wetland
Sediment/Toxicant Retention	Y	1, 2, 3, 4, 5, 6, 7, 8, 9	Y	Deep organic soils, ponded water present, feeds Indian Brook below wetland complex
Nutrient Removal	Y	1, 3, 4, 5, 6, 7, 8, 9, 10, 11	Y	watershed has areas of high development density, ponded water present, deep organic soils, pockets of invasives (Phragmites)
Production Export	Y	1, 2, 4, 5, 7, 8, 9, 12, 14	N	Birds present, dense vegetation, mixture of native with pockets of invasive plant community, nutrients likely attenuated
Sediment/Shoreline Stabilization	N	3	N	wetland is not a waterbody and does not have a defined shoreline
Wildlife Habitat	Y	5, 6, 8, 11, 13, 14, 16, 18, 19, 20, 21,	Y	mixture of undeveloped and developed land surround wetland, fragmented by development, small pond (.5 ac) within wetland
Recreation	N		N	Portion of wetland protected conservation easement, no known recreation activities or access
Educational/Scientific Value	N		N	Rare wetland plant known to occur nearby, portion protected under conservation easement, no public access known
Uniqueness/Heritage	N	1, 2, 5, 6, 17, 22	N	no known access or viewing area, urban area surrounding wetland, can be seen from roadway although limited access
Visual Quality/Aesthetics	N	6	N	can be seen from roadway although limited access, located in overall developed landscape
ES Endangered Species Habitat	N	1	N	NHB review determined 2 state listed plants present in portions of wetland, invasive plants present
Other				

Notes:

* Refer to backup list of numbered considerations.

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.

To: Arin Mills, NH Department of Transportation
John O. Morton Building
7 Hazen Drive
Concord, NH 03302-0483

From: Jessica Bouchard, NH Natural Heritage Bureau
Date: 9/23/2021 (valid until 09/23/2022)
Re: Review by NH Natural Heritage Bureau
Permits: NHDES - Wetland Standard Dredge & Fill - Major, USACE - General Permit

NHB ID: **NHB21-2935** Town: Dover Location: Exit 9/Indian Brook Drive
Description: Work will include culvert repair to two culverts (#73021 & 73-xxx) to address deficiencies identified in the existing drainage pipes. Work to #73021 will include the installation of manhole along the pipe and in the exit infield to allow for future cleaning as well as installation of rip rap lined outlet basin. Work to #73-xxx will include construction of a rip rap lined outlet basin. Pipes may be slip-lined to repair deficiencies if determined necessary. (Previous review NHB21-1489 on 5/10/2021 under PBN).

As requested, I have searched our database for records of rare species and exemplary natural communities, with the following results.

Comments **NHB: Please provide a clear aerial overlaid with the proposed limits of disturbance, and a plan showing the extent of proposed work in the wetlands. Provide photos of proposed work areas.**
F&G: No Comments At This Time

Plant species	State[1]	Federal	Notes
hairy hudsonia (*Hudsonia tomentosa*)*	T	--	This species requires periodic disturbance to its habitat (disturbed openings, river and streambanks). However, existing plants are very sensitive to trampling when growing on open sand.
northern tubercled bog-orchid (*Platanthera flava var. herbiola*)	T	--	This species occurs in forested swamps, low floodplain forest, riparian thickets, bogs, fens, seeps, and wet meadows. Threats to the plants include direct destruction of the plants, e.g., by ATV traffic, destruction (draining) of its habitat, and excessive shade when succession leads to dense shrub or tree growth.

[1]Codes: "E" = Endangered, "T" = Threatened, "SC" = Special Concern, "--" = an exemplary natural community, or a rare species tracked by NH Natural Heritage that has not yet

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

Memo

NH Natural Heritage Bureau
NHB DataCheck Results Letter

Please note: portions of this document are confidential.
Maps and NHB record pages are confidential and should be redacted from public documents.
been added to the official state list. An asterisk (*) indicates that the most recent report for that occurrence was more than 20 years ago.

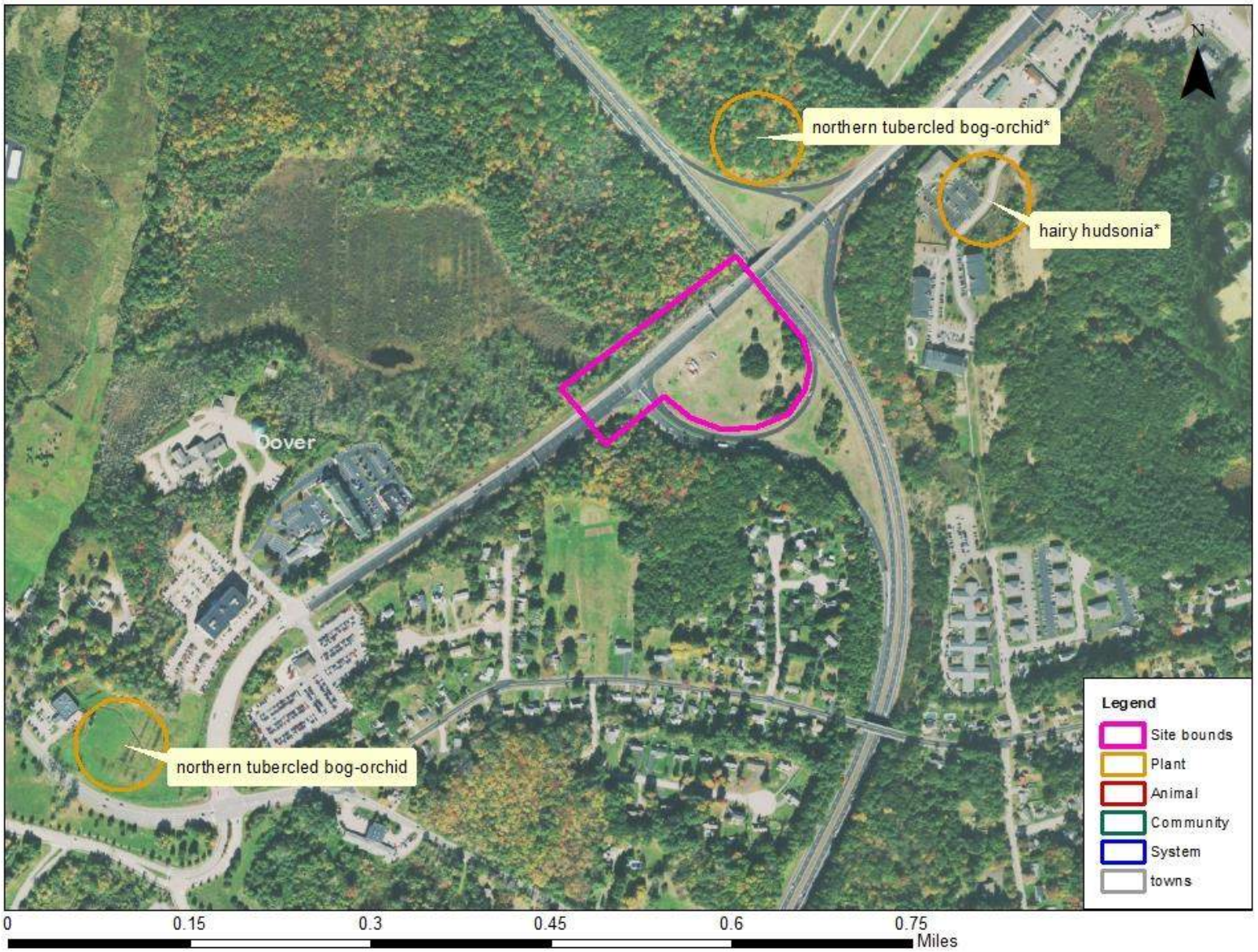
A negative result (no record in our database) does not mean that a sensitive species is not present. Our data can only tell you of known occurrences, based on information gathered by qualified biologists and reported to our office. However, many areas have never been surveyed, or have only been surveyed for certain species. An on-site survey would provide better information on what species and communities are indeed present.

Department of Natural and Cultural Resources
Division of Forests and Lands
(603) 271-2214 fax: 271-6488

DNCR/NHB
172 Pembroke Rd.
Concord, NH 03301

CONFIDENTIAL – NH Dept. of Environmental Services review

NHB21-2935



STATE OF NEW HAMPSHIRE

DEPARTMENT OF TRANSPORTATION

BUREAU OF ENVIRONMENT

NOTE TO FILE

Date: **October 22, 2021**

From: **Arin Mills**
Senior Environmental Manager
Bureau of Environment

Project: **Dover Drainage Repair, 40042**

RE: Northern tubercled bog-orchid (*Platanthera flava var. herbiola*) Field Review

The above referenced project is to repair two existing drainage pipes, #73021 and 73-XXX, at exit 9 of NH-16 and Indian Brook Drive. The repair will include the installation of stone outlet basins at the outlet of both pipes to address safety concerns resulting from water back-up within the pipes and into the roadway. Work will require a Standard Dredge and Fill permit from NHDES for construction of these basins.

A Natural Heritage Bureau DataCheck, NHB21-2935, determined potential habitat for Northern tubercled bog-orchid (*Platanthera flava var. herbiola*) may be within the project area and additional field surveys were requested for the outlet of pipe 73-XXX for evidence of the species. On October 21, 2021 I spent approximately 30 minutes searching the area surrounding the outlet for evidence of plants that fit the leaf description of the species. No plants were observed within the project that met the physical description similar to *P. flava var. herbiola*. The following is a species list of plants observed within the project area:

Tree: White Pine Red Maple
Shrub: Glossy buckthorn, Highbush blueberry, White pine, Winterberry and Arrowwood
Herb: Broad-leaved cat-tail, Sensitive fern, Goldenrod spp., Bladder sedge

The outlet of pipe 73021 was also visited. Within the wetland area only a dense stand of Phragmites was observed. No plants were observed within the project that met the physical description similar to *P. flava var. herbiola.*

Arin Mills
Environmental Manager
NH Department of Transportation

Photo 1: Outlet of pipe 73-XXX looking Northeast

Photo 2: Outlet of pipe 73-XXX looking North

Photo 3: Outlet of pipe #73021

Mills, Arin

From: DNCR: NHB Review
Sent: Monday, October 25, 2021 10:33 AM
To: Mills, Arin
Subject: RE: NHB review: NHB21-2935

Hi Arin,

Thank you for the survey and quick report. The NHB has no further comments or concerns regarding potential habitat for *Platanthera flava* var. *herbiola* at the project location.

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Sent: Monday, October 25, 2021 9:51 AM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Subject: RE: NHB review: NHB21-2935

Thanks Jessica. Attached are a few photos of the pipe outlet as observed last week. The grade stake with the orange ribbon is the location of the pipe outlet, currently submerged.

~ Arin

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Monday, October 25, 2021 9:45 AM
To: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Subject: RE: NHB review: NHB21-2935

Hi Arin,

Thank you for performing a field search for *P. flava* var. *herbiola* at the site. Yes, please send over the additional photos. I'd like to see how the area currently looks before coming to a final conclusion.

Thank you,

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources

172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Sent: Friday, October 22, 2021 9:54 AM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Subject: RE: NHB review: NHB21-2935

Jessica,

I was able to get out to the Dover site yesterday to take a look for any plants that may resemble Platanthera flava var. herbiola. Thanks for the resources you provided as they did help me with familiarizing myself with the species ahead of my field review. In summary, I did not observe any plants that resemble this species in the project area of either pipe. I did generate a quick record of my field visit (attached) to document my review, to include a few photos. I can send full photos if you prefer, and also have additional photos that I did not include in the memo.

Would you agree that based on the results of this field review no impacts to the species are anticipated? Feel free to reach out with any additional questions or concerns you may have.

~ Arin

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Monday, October 18, 2021 10:05 AM
To: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Subject: RE: NHB review: NHB21-2935

Arin,

It is questionable as to if it is too late to survey for this species in Dover. With over 400 threatened and endangered plant species in the state, the senescence time of each species is not known.

To distinguish Platanthera flava var. herbiola from other Platanthera species the plant must be in flower. However, certain species within the genus only have basal flowers, while others, var. herbiola included, have principal leaves that are not confined to the base of the plant.

You can attempt to survey the site, given that it has been a warm fall. However, if any orchid species are present that fit the leaf description previously mentioned, it will not be possible to ID it to the species level.

If orchids that at least match the vegetative description are found within the disturbance area, we will have to evaluate the next steps.

Of the two nearby records for this species shown on the Datacheck Letter, the record on page 7 is not on private property and you could first try to find the plants at this location, which would help inform their current condition. However, note that this site was surveyed in 2020 and the orchids were not found. Page 7 includes the directions and the approach for the occurrence, and it can be accessed via city-owned land. Alternately, parking could occur along the shoulder of the Spaulding Turnpike (if safety is not an issue).

In case you don't have it, I have attached a pdf of Flora Novae Angliae. Platanthera is found on page 207.

Please provide confirmation that you received this email.

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Sent: Friday, October 15, 2021 11:34 AM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Subject: Re: NHB review: NHB21-2935

Jessica. We need to have the wetland permit 'in-hand' before the project can advertise. And I can't submit the application until the NHB coordination is complete. To meet the worst case scenario, assuming an RFI from DES, we need to submit the application about the end of the month to DES.

If you really feel it is too late to survey this year could we put a condition contingent I survey pipe 73-xxx before ground disturbance in wetlands? I may assume the permit may be conditioned, but it allows us to submit and receive ahead of advertising. Thoughts?

Arin

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Friday, October 15, 2021 9:01 AM
To: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Subject: RE: NHB review: NHB21-2935

Hi Arin,

I thought I read in the presentation that the work wasn't planned to happen until 2023, perhaps I recall incorrectly. Tell me more about the project timeline. Advertising doesn't mean the work will be occurring at that time, so how exactly are they interdependent?

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Sent: Thursday, October 14, 2021 1:44 PM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Subject: RE: NHB review: NHB21-2935

Hello Jessica. Thanks for your review. The concern I have is that this project intends to be advertised in February. I am hoping to submit the wetland application to DES in the coming weeks. Is it feasible I survey the area now? I can get out to the site possibly tomorrow or next week.

~ Arin

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Thursday, October 14, 2021 1:11 PM
To: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Subject: RE: NHB review: NHB21-2935

Hi Arin,

Thank you for your patience while I reviewed the project. I also looked at the presentation for the September NHDOT NRAC meeting.

Based on the information provided, appropriate habitat for Hudsonia tomentosa is not expected to be within the proposed work area, therefore NHB has no concerns regarding potential impacts to this species.

Platanthera flava var. herbiola is most often associated with wet meadows, roadside ditches and swales, and fens in fields, which are open, light exposed wetlands. However, this species is also associated with seepage swamps shaded by red maple, and nearby the project site, a records exists within a wet meadow with much shrub and young sapling growth.

The outlet of culvert #73021 is overrun with Phragmites and it is unlikely that this species would be found within the dense Phragmites stand, however, it may have the potential to be present around the parameter of the Phragmites in the proposed work area. Is there any portion of the proposed wetland impact area associated with #73021 that is not densely populated by Phragmites? If so, these areas should be surveyed for Platanthera flava var. herbiola.

Also, it is possible that the outlet of culvert #73-XXX may provide appropriate habitat. Please also survey within the proposed wetland impact area associated with work at this culvert outlet.

Survey areas should include all areas of proposed ground disturbance (permanent and temporary impacts) within the wetland, except for the area densely covered in Phragmites.

Please see the attached factsheet from Maine that includes aides in identification. This species is in flower between approximately mid-June to late July-early August, and a survey should be conducted during flower for proper ID. Please see the Go Botany link that refers to a species that Platanthera flava var. herbiola may be confused with https://gobotany.nativeplanttrust.org/species/platanthera/flava/

Please contact NHB with results when surveys are complete. If found, please document plants with GPS, diagnostic photos, and one of the reporting forms posted on our website at: https://www.nh.gov/nhdfl/reports/rare-plant-list.htm

Please let me know if you have any questions.

Thank you,

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist
New Hampshire Natural Heritage Bureau (NHB)
Division of Forests & Lands
NH Dept. of Natural & Cultural Resources
172 Pembroke Rd
Concord, NH 03301
(603) 271-2834 (office)

NHB DataCheck Tool

From: Mills, Arin <Arin.J.Mills@dot.nh.gov>
Sent: Thursday, September 30, 2021 11:10 AM
To: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Subject: RE: NHB review: NHB21-2935

Jessica,

I have compiled the requested information regarding this review. Attached is a photo sheet that depicts the work area with captions, an additional panoramic photo from the spring with labels for both pipes, am aerial image with the wetland impact areas identified as well as a clip from the draft wetland impact plans (this was shown at the September Nat Res meeting).

Let me know what additional questions or concerns you may have for the project.

Thanks!

Arin Mills
Senior Environmental Manager, Operations Management
NH Department of Transportation
Bureau of Environment
7 Hazen Drive, Concord, NH 03302
Ph: (603)271-0187
Arin.j.mills@dot.nh.gov

From: DNCR: NHB Review <nhbreview@dncr.nh.gov>
Sent: Friday, September 24, 2021 3:57 PM
To: Mills, Arin <arin.mills@dot.nh.gov>
Subject: NHB review: NHB21-2935

Attached, please find the review we have completed. If your review memo includes potential impacts to plants or natural communities please contact me for further information. If your project had potential impacts to wildlife, please contact NH Fish and Game at the phone number listed on the review.

Best,
Jessica

Jessica Bouchard
Environmental Reviewer / Ecological Information Specialist

NH Natural Heritage Bureau
DNCR - Forests & Lands
172 Pembroke Rd
Concord, NH 03301
603-271-2834

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

In Reply Refer To: September 10, 2021
Consultation Code: 05E1NE00-2021-SLI-4715
Event Code: 05E1NE00-2021-E-14471
Project Name: Dover Drainage- 40042

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the U.S. Fish and Wildlife Service (Service) under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
(603) 223-2541

Project Summary

Consultation Code: 05E1NE00-2021-SLI-4715
Event Code: Some(05E1NE00-2021-E-14471)
Project Name: Dover Drainage- 40042
Project Type: TRANSPORTATION
Project Description: Work will include drainage improvements to address deficiencies at the Exit 9/Indian Brook Drive off NH-16 in Dover. Two existing drainage pipes will be repaired, to include the construction of two rip-rap lined outlet basins to accept stormwater discharge.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.21725925,-70.89506721441614,14z

Counties: Strafford County, New Hampshire

Endangered Species Act Species

There is a total of 2 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Mammals

NAME	STATUS
Northern Long-eared Bat *Myotis septentrionalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9045	Threatened

Insects

NAME	STATUS
Monarch Butterfly *Danaus plexippus* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/9743	Candidate

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New England Ecological Services Field Office
70 Commercial Street, Suite 300
Concord, NH 03301-5094
Phone: (603) 223-2541 Fax: (603) 223-0104
http://www.fws.gov/newengland

IPaC Record Locator: 769-105526210 September 10, 2021

Subject: Consistency letter for the 'Dover Drainage- 40042' project indicating that any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Dear Arin Mills:

The U.S. Fish and Wildlife Service (Service) received on September 10, 2021 your effects determination for the 'Dover Drainage- 40042' (the Action) using the northern long-eared bat (*Myotis septentrionalis*) key within the Information for Planning and Consultation (IPaC) system. You indicated that no Federal agencies are involved in funding or authorizing this Action. This IPaC key assists users in determining whether a non-Federal action may cause "take"[1] of the northern long-eared bat that is prohibited under the Endangered Species Act of 1973 (ESA) (87 Stat.884, as amended; 16 U.S.C. 1531 et seq.).

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o). Unless the Service advises you within 30 days of the date of this letter that your IPaC-assisted determination was incorrect, this letter verifies that the Action is not likely to result in unauthorized take of the northern long-eared bat.

Please report to our office any changes to the information about the Action that you entered into IPaC, the results of any bat surveys conducted in the Action area, and any dead, injured, or sick northern long-eared bats that are found during Action implementation.

If your Action proceeds as described and no additional information about the Action's effects on species protected under the ESA becomes available, no further coordination with the Service is required with respect to the northern long-eared bat.

The IPaC-assisted determination for the northern long-eared bat **does not** apply to the following ESA-protected species that also may occur in your Action area:

- Monarch Butterfly *Danaus plexippus* Candidate

You may coordinate with our Office to determine whether the Action may cause prohibited take of the animal species listed above.

[1]Take means to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct [ESA Section 3(19)].

Action Description
You provided to IPaC the following name and description for the subject Action.

1. Name

Dover Drainage- 40042

2. Description

The following description was provided for the project 'Dover Drainage- 40042':

> Work will include drainage improvements to address deficiencies at the Exit 9/ Indian Brook Drive off NH-16 in Dover. Two existing drainage pipes will be repaired, to include the construction of two rip-rap lined outlet basins to accept stormwater discharge.

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@43.21725925,-70.89506721441614,14z

Determination Key Result

This non-Federal Action may affect the northern long-eared bat; however, any take of this species that may occur incidental to this Action is not prohibited under the final 4(d) rule at 50 CFR §17.40(o).

Determination Key Description: Northern Long-eared Bat 4(d) Rule
This key was last updated in IPaC on **May 15, 2017**. Keys are subject to periodic revision.

This key is intended for actions that may affect the threatened northern long-eared bat.

The purpose of the key for non-Federal actions is to assist determinations as to whether proposed actions are excepted from take prohibitions under the northern long-eared bat 4(d) rule.

If a non-Federal action may cause prohibited take of northern long-eared bats or other ESA-listed animal species, we recommend that you coordinate with the Service.

Determination Key Result

Based upon your IPaC submission, any take of the northern long-eared bat that may occur as a result of the Action is not prohibited under the ESA Section 4(d) rule adopted for this species at 50 CFR §17.40(o).

Qualification Interview

1. Is the action authorized, funded, or being carried out by a Federal agency?

   No

2. Will your activity purposefully **Take** northern long-eared bats?

   No

3. [Semantic] Is the project action area located wholly outside the White-nose Syndrome Zone?

   Automatically answered
   No

4. Have you contacted the appropriate agency to determine if your project is near a known hibernaculum or maternity roost tree?

   Location information for northern long-eared bat hibernacula is generally kept in state Natural Heritage Inventory databases – the availability of this data varies state-by-state. Many states provide online access to their data, either directly by providing maps or by providing the opportunity to make a data request. In some cases, to protect those resources, access to the information may be limited. A web page with links to state Natural Heritage Inventory databases and other sources of information on the locations of northern long-eared bat roost trees and hibernacula is available at www.fws.gov/midwest/endangered/mammals/nleb/nhisites.html.

   Yes

5. Will the action affect a cave or mine where northern long-eared bats are known to hibernate (i.e., hibernaculum) or could it alter the entrance or the environment (physical or other alteration) of a hibernaculum?

   No

6. Will the action involve Tree Removal?

   Yes

7. Will the action only remove hazardous trees for the protection of human life or property?

   No

8. Will the action remove trees within 0.25 miles of a known northern long-eared bat hibernaculum at any time of year?

   No

9. Will the action remove a known occupied northern long-eared bat maternity roost tree or any trees within 150 feet of a known occupied maternity roost tree from June 1 through July 31?

   No

Project Questionnaire

If the project includes forest conversion, report the appropriate acreages below. Otherwise, type '0' in questions 1-3.

1. Estimated total acres of forest conversion:

0.1

2. If known, estimated acres of forest conversion from April 1 to October 31

0.1

3. If known, estimated acres of forest conversion from June 1 to July 31

0.1

If the project includes timber harvest, report the appropriate acreages below. Otherwise, type '0' in questions 4-6.

4. Estimated total acres of timber harvest

0

5. If known, estimated acres of timber harvest from April 1 to October 31

0

6. If known, estimated acres of timber harvest from June 1 to July 31

0

If the project includes prescribed fire, report the appropriate acreages below. Otherwise, type '0' in questions 7-9.

7. Estimated total acres of prescribed fire

0

8. If known, estimated acres of prescribed fire from April 1 to October 31

0

9. If known, estimated acres of prescribed fire from June 1 to July 31

0

If the project includes new wind turbines, report the megawatts of wind capacity below. Otherwise, type '0' in question 10.

10. What is the estimated wind capacity (in megawatts) of the new turbine(s)?

0

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Date Reviewed: 9/15/2021
(Desktop or Field Review Date)

☒ This Project uses only State funding; however project activities listed below comply with the PA.

Project Name: Turnpikes Drainage Repair

State Number: 40042 **FHWA Number:** N/A

Environmental Contact: Arin Mills **DOT**
Email Address: Arin.j.mills@dot.nh.gov **Project Manager:** Emily Polychronopoulos

Project Description: Dover: Work will include drainage improvements to address deficiencies at the Exit 9/Indian Brook Drive off NH-16 in Dover. Existing drainage pipes (#73021 & 73-xxx) will be repaired, to include the construction of two rip-rap lined outlet basins to accept stormwater discharge. Merrimack: Work will include repairing and replacing existing drainage culverts with new pipes and catch basins. New pipes will be in the same location, with some slight changes to elevation.

Please select the applicable activity/activities:

Highway and Roadway Improvements	
☐	1. Modernization and general highway maintenance **that may require additional highway right-of-way or easement**, including: Choose an item. Choose an item.
☐	2. Installation of rumble strips or rumble stripes
☐	3. Installation or replacement of pole-mounted signs
☐	4. Guardrail replacement, provided any extension does not connect to a bridge older than 50 years old (unless it does already), and there is no change in access associated with the extension
Bridge and Culvert Improvements	
☒	5. Culvert replacement (excluding stone box culverts), when the culvert is less than 60" in diameter and excavation for replacement is limited to previously disturbed areas
☐	6. Bridge deck preservation and replacement, as long as no character defining features are impacted
☐	7. Non-historic bridge and culvert maintenance, renovation, or total replacement, **that may require minor additional right-of-way or easement**, including: Choose an item. Choose an item.
☐	8. Historic bridge maintenance activities within the limits of existing right-of-way, including: Choose an item. Choose an item.
☐	9. Stream and/or slope stabilization and restoration activities (including removal of debris or sediment obstructing the natural waterway, or any non-invasive action to restore natural conditions)
Bicycle and Pedestrian Improvements	
☐	10. Construction of pedestrian walkways, sidewalks, sidewalk tip-downs, small passenger shelters, and alterations to facilities or vehicles in order to make them accessible for elderly and handicapped persons
☐	11. Installation of bicycle racks
☐	12. Recreational trail construction
☐	13. Recreational trail maintenance when done on existing alignment
☐	14. Construction of bicycle lanes and shared use paths and facilities within the existing right-of-way
Railroad Improvements	
☐	15. Modernization, maintenance, and safety improvements of railroad facilities within the existing railroad or

Appendix B Certification – Activities with Minimal Potential to Cause Effects

	highway right-of-way, **provided no historic railroad features are impacted,** including, but not limited to: Choose an item. Choose an item.
☐	16. In-kind replacement of modern railroad features (i.e. those features that are less than 50 years old)
☐	17. Modernization/modification of railroad/roadway crossings provided that all work is undertaken within the limits of the roadway structure (edge of roadway fill to edge of roadway fill) and no associated character defining features are impacted
Other Improvements	
☐	18. Installation of Intelligent Transportation Systems
☐	19. Acquisition or renewal of scenic, conservation, habitat, or other land preservation easements where no construction will occur
☐	20. Rehabilitation or replacement of existing storm drains.
☐	21. Maintenance of stormwater treatment features and related infrastructure

Please describe how this project is applicable under Appendix B of the Programmatic Agreement.

In Dover, two 1976 drainage pipes will be repaired and construction will include riprap lined outlet basins. The features are less than 50 years old and less than 60ft in diameter. In Merrimack, the scope of the project is replacement of the existing pipes in the same location with some slight elevation change. The National register properties nearby will be avoided, and no excavation is proposed within 25 ft of the cemetery.

Please submit this Certification Form along with the Transportation RPR, including photographs, USGS maps, design plans and as-built plans, if available, for review. Note: The RPR can be waived for in-house projects, please consult Cultural Resources Program Staff.

Coordination Efforts:

Has an RPR been submitted to NHDOT for this project?	No	NHDHR R&C # assigned?	Click here to enter text.
Please identify public outreach effort contacts; method of outreach and date:	All work is constrained to the ROW.		

Finding: (To be filled out by NHDOT Cultural Resources Staff)

☐	**No Potential to Cause Effects**	☒	**No Historic Properties Affected**
This finding serves as the Section 106 Memorandum of Effect. No further coordination is necessary.			
☐	**This project does *not* comply with Appendix B. Review will continue under Stipulation VII of the Programmatic Agreement. Please contact NHDOT Cultural Resources Staff to determine next steps.**		

NHDOT comments:

9/15/2021

Sheila Charles

NHDOT Cultural Resources Staff

Date

Section 106 Programmatic Agreement – Cultural Resources Review Effect Finding

Appendix B Certification – Activities with Minimal Potential to Cause Effects

Coordination of the Section 106 process should begin as early as possible in the planning phase of the project (undertaking) so as not to cause a delay.

Project sponsors should not predetermine a Section 106 finding under the assumption a project is limited to the activities listed in Appendix B until this form is signed by the NHDOT Bureau of Environment Cultural Resources Program staff.

Every project shall be coordinated with, and reviewed by the NHDOT-BOE Cultural Resources Program in accordance with the *Programmatic Agreement Among the Federal Highway Administration, the New Hampshire State Historic Preservation Office, the Army Corps of Engineers, New England District, the Advisory Council on Historic Preservation, and the New Hampshire Department of Transportation Regarding the Federal Aid Highway Program in New Hampshire*. In accordance with the Advisory Council's regulations, we will continue to consult, as appropriate, as this project proceeds.

NHDOT and the State Historic Preservation Office may use provisions of the Programmatic Agreement to address the applicable requirements of NH RSA 227-C:9 in the location, identification, evaluation and management of historic resources, for projects funded by State funds.

If any portion of the project is not entirely limited to any one or a combination of the activities specified in Appendix B (with, or without the inclusion of any activities listed in Appendix A), please continue discussions with NHDOT Cultural Resources staff.

This No Potential to Cause Effect or No Historic Properties Affected project determination is your Section 106 finding, as defined in the Programmatic Agreement.

Should project plans change, please inform the NHDOT Cultural Resources staff in accordance with Stipulation VII of the Programmatic Agreement.

NHDOT BOE Cultural Resources Review

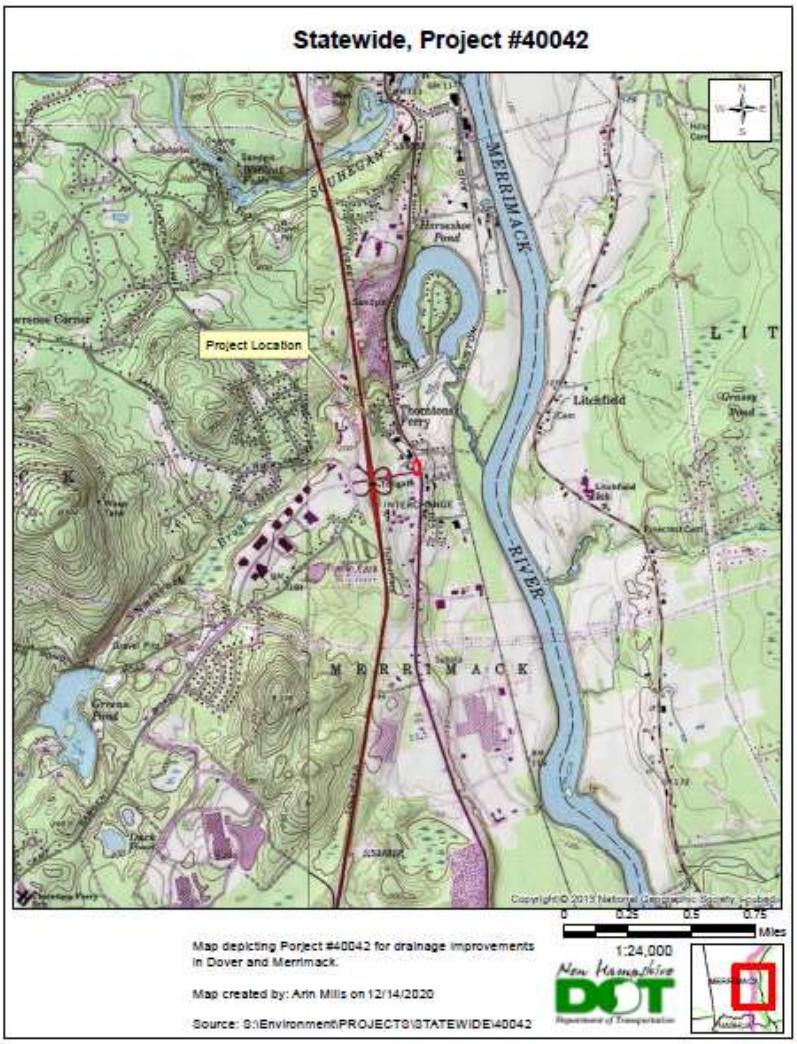
For the purpose of compliance with regulations of the National Historic Preservation Act, the Advisory Council on Historic Preservation's *Procedures for the Protection of Historic Properties* (36 CFR 800), the US Army Corps of Engineers' *Appendix C*, and/or state regulation RSA 227-C:9, *Directive for Cooperation in the Protection of Historic Resources*, the NHDOT Cultural Resources Program has reviewed the enclosed Standard Dredge and Fill Application for potential impacts to historic properties.

Proposed Project: Proposed work is to address drainage deficiencies at:

- Greeley St/US 3 in south Merrimack in the Thorntons Ferry section of town, East of Exit 11 of the F.E.E. Everett turnpike.
- Spaulding Turnpike Exit 9 SB off Indian Brook Drive in Dover.

Work will include repair and replacement of existing drainage culverts and structures.

Location: Merrimack 0676 (24"), 36538 (24"), 39051 (15"), 44868 (24") and 45919 (24")
Goal is to improve drainage deficiencies at Greeley Street/US3 in Merrimack by repairing and replacing existing drainage culverts with new pipes and catch basins. The environmental review work in Merrimack is being conducted by Arin Mills. The scope of the project is replacement of the existing pipes in the same location with some slight elevation change.



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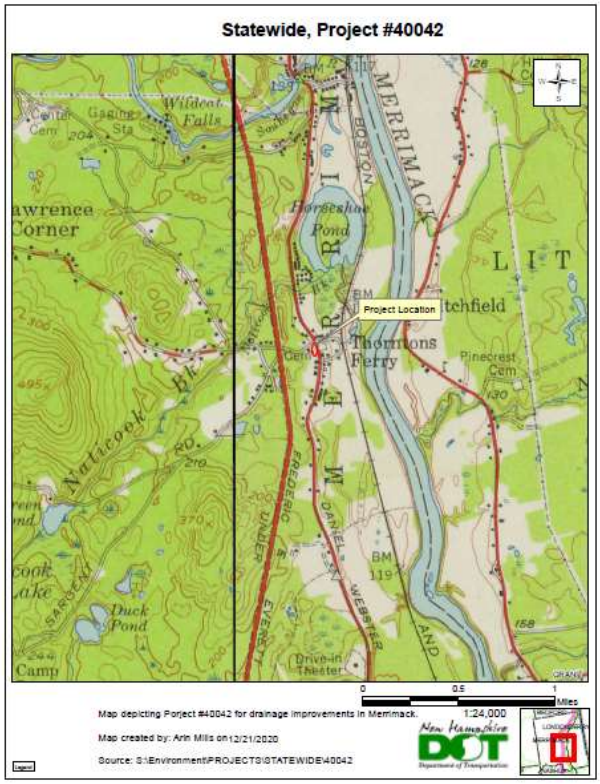
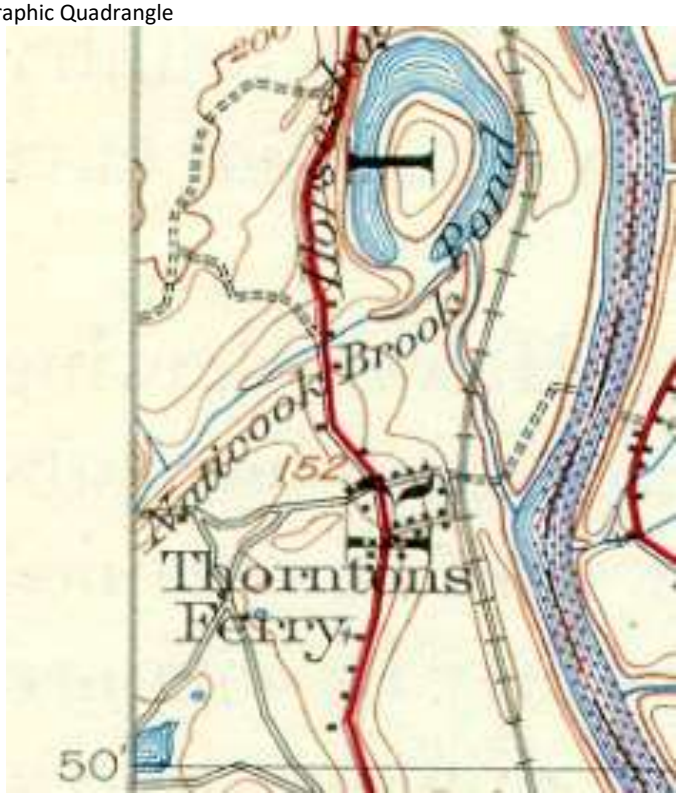
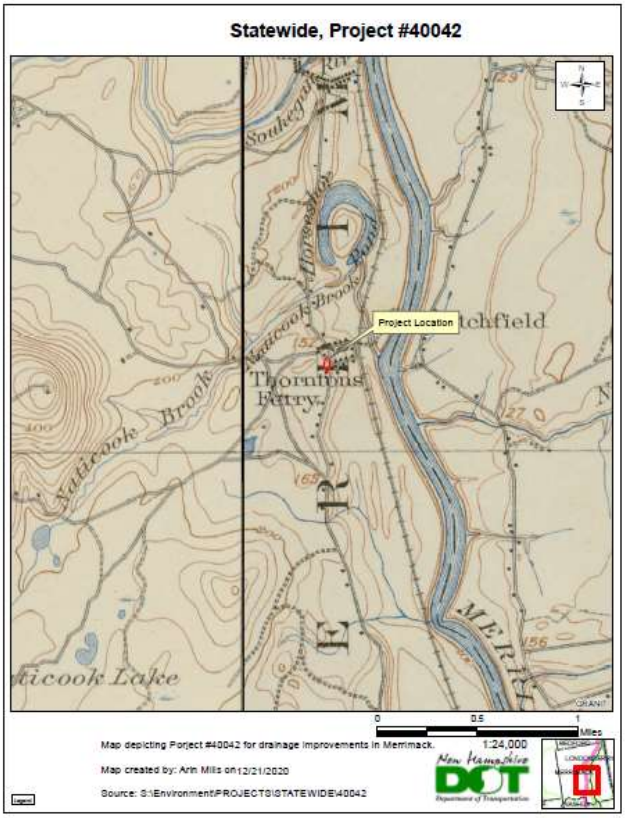
1953 Manchester, NH 15' USGS Topographic Quadrangle

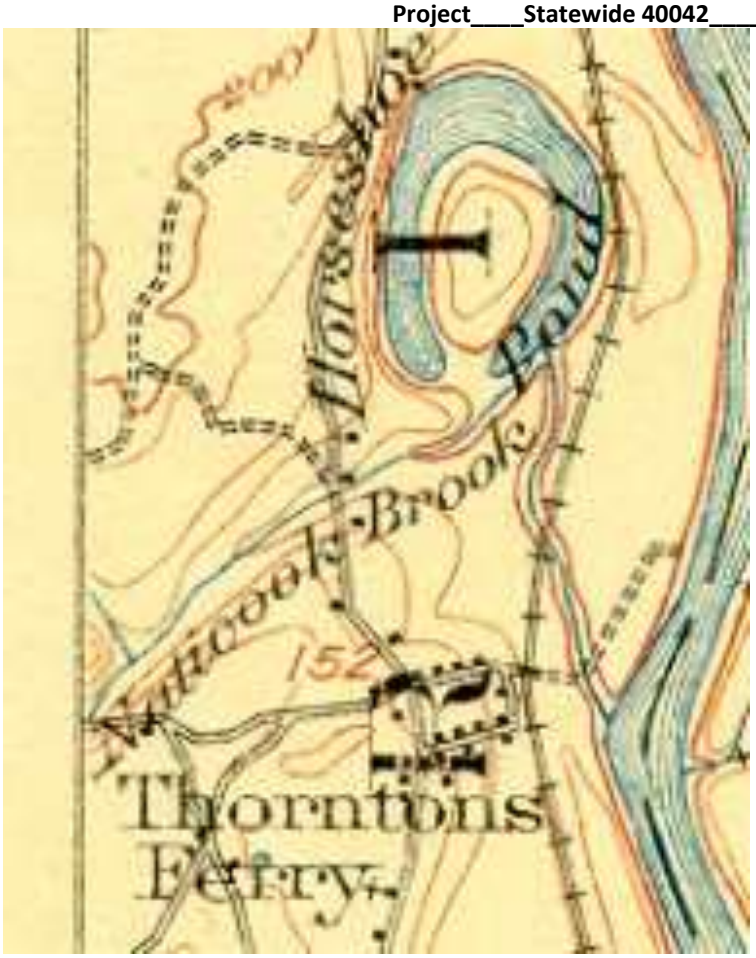


1941 Manchester, NH 15' USGS Topographic Quadrangle

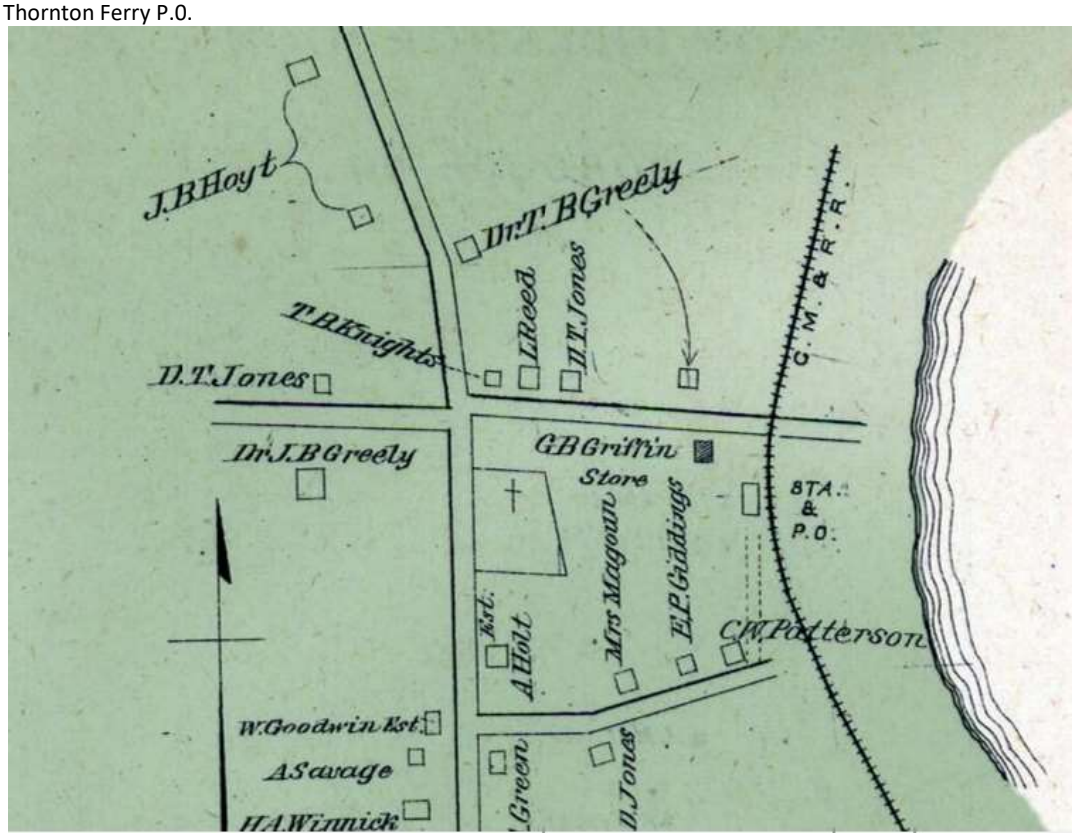


1905 Manchester, NH 15' USGS Topographic Quadrangle

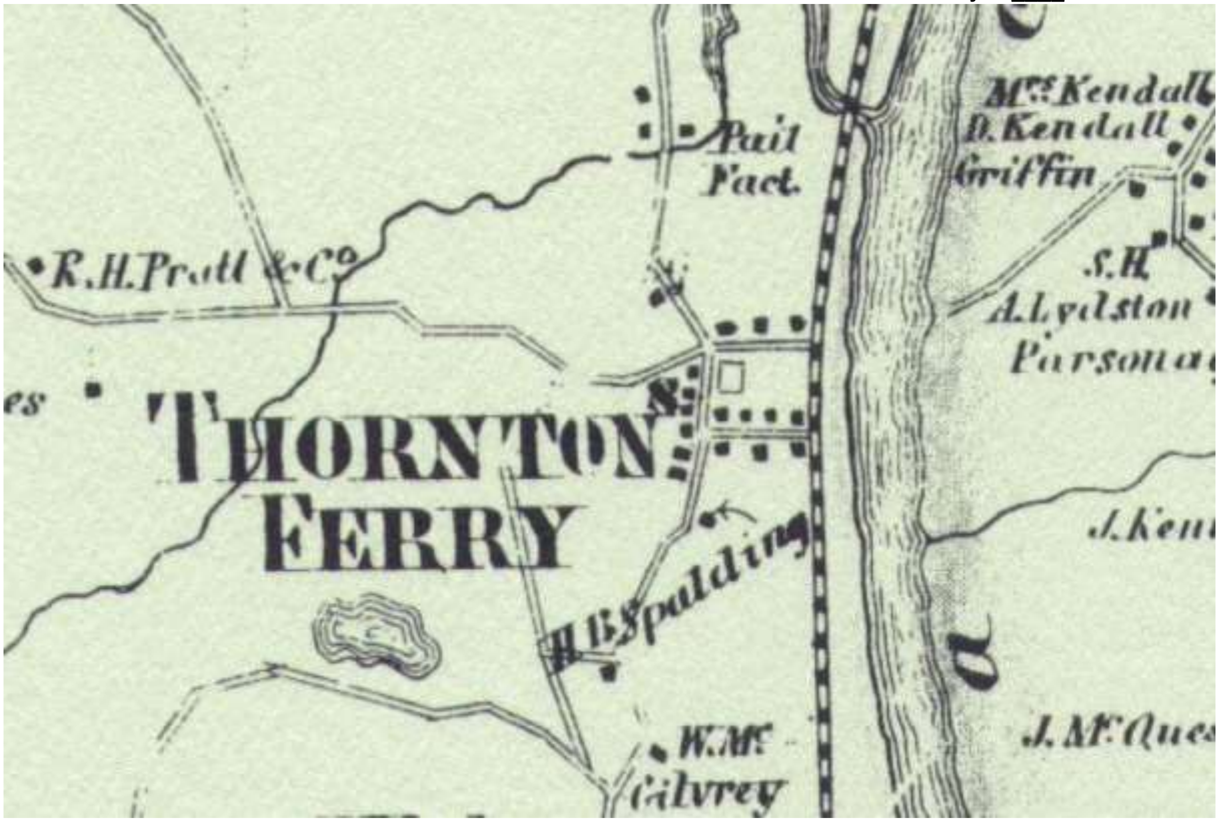




1892 Hurd Map of Thornton Ferry P.0.



1858 J. Chace 1858 Map of Thornton Ferry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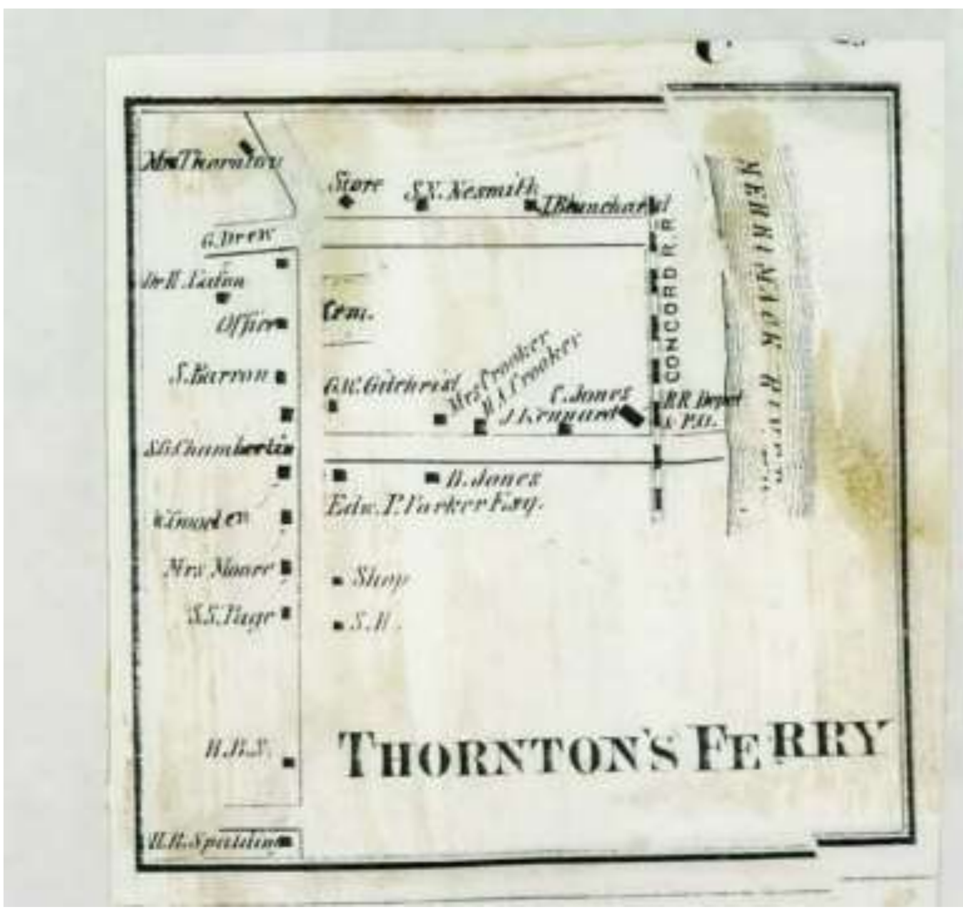
Store
S.N. Nesmith
CONCORD R.R.
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S.Barron
C.Jones
R.R. Depot & P.O.
Edw. P. Parker Esq.
Shop
S.S.Page
S.H.
H.B.S.
THORNTON'S FERRY

Above Ground Review

Current Landscape:

The landscape is associated with the intersection of Greeley Street and US Rt 3/Daniel Webster Highway. Concrete median strips lie within the DWH and on Greeley Street, west of DHW. There is a small somewhat triangular concrete island for the traffic light arm in the road at the NW junction of Greeley Street and DWH.

- NW quadrant – Elements include a sidewalk, a presumably modern stone retaining north of Greeley Street, and The Common Man Restaurant (aka the Signor's House/Matthew Thornton's Homestead)
- NE quadrant – no sidewalks, Thornton Graveyard
- SW quadrant – T.D. Bank, sidewalk on south side of Greeley Street only
- SE quadrant – Sew Right Every Time, and other offices, no sidewalks

Thorntons Ferry

Project activities are proposed in the section of town known as Thorntons Ferry, Merrimack, NH. Former State Architectural Historian James Garvin (2003) wrote a summary history of this area. Merrimack's history is also summarized on the town's website (https://www.Merrimacknh.gov/)

Merrimack was originally part of the Dunstable grant of 1673 and some European American settlement dates this early (Hurd 1885:529) In 1734, Massachusetts granted the land as part of *Naticook*. In 1746, the boundary between NH and Massachusetts was revised and Governor Benning Wentworth signed a charter on April 2, 1746 establishing the Town of *Merrymac*.

Transportation Context, including Daniel Webster Highway/US RT 3

Both Thorntons Ferry and, to the north Reeds Ferry, in Merrimack were named after ferry locations crossing the Merrimack River to Litchfield. In the absence of bridges across the Merrimack River, these ferries and nearby roads, including what is now DWH/US RT 3, represented important transportation routes from the early 18th through the 20th centuries. In addition to the Thornton Ferry village center, the DWH was lined with farms, residences and restaurants/taverns.

Since the 1730s, the DWH, initially known as the Boston Road and later as Concord Road, was an early European American transportation corridor that extended west of the Merrimack River. Over time, it has been widened and upgraded (Hostutler 1992; Merrimack Townwide Project Area MER-0TWA; DOE 11/1/1992 not eligible). Twentieth century changes are summarized in Hostutler's 1992 Daniel Webster Highway Early Auto Era Historic District Area Form (MER-ODWH; not NR eligible 12/16/1992), prepared for the Nashua-Hudson Circumferential Highway Project. In the 20th century, the Merrimack River north/south paved and upgraded auto trunk line was envisioned. It was largely in place by 1915. By the 1930s, this highway was the 4th busiest in the state (Hostutler 1992). Upgrades and changes followed in the 1950s and 1960s, and widening in the 1980s.

Between 1952 and 1957, the Frederic E. Everett Turnpike (FEET) was established, opening a transportation corridor roughly parallel and west of the DWH/US RT 3 that changed and bisected elements of the Merrimack landscape.

Cartographic review indicates the historic east/west road alignment in the vicinity of the study area was situated north of the current Greeley Street road alignment. This alignment may have corresponded with Whitney Street. This former alignment extended towards the northwest corner of Thorntons Graveyard, while the current east/west road alignment(Greeley Street) extends towards

the southwest corner of the Thorntons Graveyard. A review of maps (historicaerials.com) indicates this realignment took place between 1971 and 1976.

Note: There are no Sanborn Insurance maps for Merrimack.

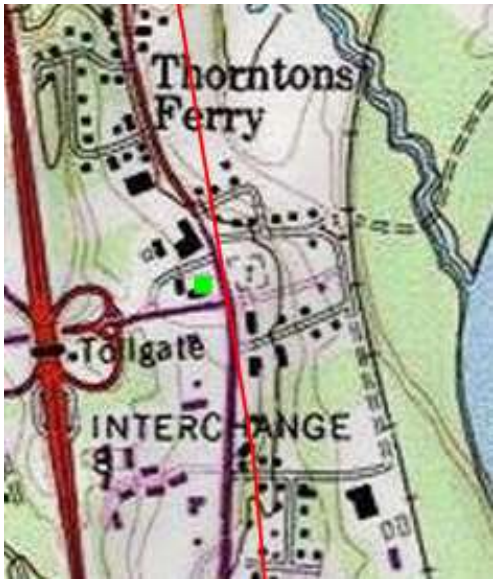
EMMIT Review Results

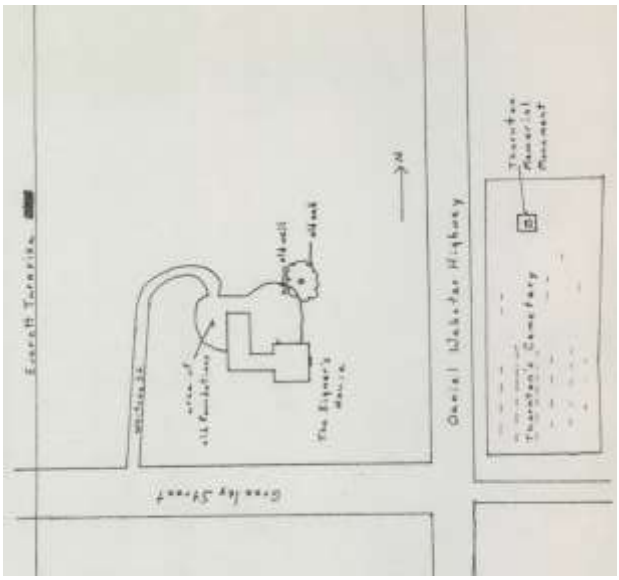
EMMIT review (12/23/2020) revealed the study area lies within the 1 to 1.5 mile wide corridor of the Frederic E. Everett Highway Project Area (ZMT-FEEH; Hooper & Monroe 2008; Determined not eligible 7/28/2010). Hooper & Monroe (2008) note that the FEET corridor was established as a bypass of the DWH/US RT 3. Although the EMMIT map shows the study area within the corridor project area, the analyses by Preservation Co. do not include the current study area.

EMMIT review (12/23/2020) revealed several historic resources within or adjacent to the project area, including the location of National Register of Historic Places properties on both the west and east sides of the DW highway at the northern side of the Greeley Street/US3 DW highway crossing:

- the Signor's House (Matthew Thornton Homestead, now the Common Man Restaurant) in the Northwest quadrant, and
- the Thornton Graveyard in the Northeast quadrant.

The west side of the project area/US3 DW highway also lies within the Frederic E. Everett Highway Project Area (ZMT-FEEH), which was determined not National Register Eligible (7/28/2010).





The National Register nomination for the Signer's House (aka Matthew Thornton Homestead) in the northwest quadrant of Greeley Street and the DWH intersection (now a Common Man Restaurant at 304 DWH) and the Matthew Thornton Cemetery in the northeast quadrant of the intersection Greeley Street/ DWH intersection dates to 1978 (MER0166; Anne Giesecke 1978). The nomination identifies the two property elements as important components of the history of the town and NH "*historically, architecturally, visually, and culturally. Both are important as indications of 18th century life and values*". In addition, Giesecke (1978) noted these two properties "*are irreplaceable resources which provide a tangible link to the formative years of our state and nation. They may have vital information regarding the lifestyle and technology of the 18th and 19th centuries*."

Signor's House/Matthew Thornton House/Common Man Restaurant Parcel

In the northwest quadrant is the late Georgian style house, important as the only example of late Georgian style in Merrimack and due to its association with Matthew Thornton (1714-1803), a renowned signer of the Declaration of Independence and leader in state and national government and legislative affairs.

Ownership of this land parcel has been traced back to 1739 (Garvin 2003), when Litchfield farm Jonathon Cummings purchased an 81-acre parcel of Lot No. 12. Cummings may have been granted and operated a ferry across the Merrimack by the County of Middlesex in Massachusetts before the state boundaries were fixed in their present location. Cummings sold the property in December 1763 to Colonel Edward Goldstone Lutwyche who by 1767 operated a ferry crossing at Lutwyche's Ferry under the authority of the Province of NH (Garvin 2003)

In 1780, Matthew Thornton purchased the property in the study area (that formerly was confiscated from Loyalist Col. Lutwyche's family) and subsequent occupation included his family and descendants. He also petitioned and was granted the ferry privilege. Thornton's wife was Hannah Jack (a former name of the restaurant property) and they had 5 children. Deed research revealed Matthew Thornton sold the property to his son Matthew Thornton, Jr. in 1797.

Some of Matthew Thornton's activities included:

- medical doctor
- militia colonel
- elected to NH legislature in 1758
- appointed judge in 1771
- elected to NH First Provincial Congress and as its President in 1775
- headed Committee that created NH's Constitution
- elected as NH delegate to Continental Congress in 1776
- signed the Declaration of Independence November 4, 1776
- served as Associate Justice of the NH Superior Court 1776-1778.

The house has undergone substantive alteration for its use as a tavern through much of the 19th century, as a residence in the early 20th century, as a small inn in the 1930s, and as an apartment and multifamily use until 1970. In 1976, the structure was purchased for conversion into a restaurant, and currently is operated as the Common Man Restaurant.

It is also pertinent to note that Thornton's residence in Derry, NH where he lived from 1740 to 1779, was designated a National Historic Landmark in 1972. Giesecke (1978) noted the house in Merrimack, as well as the cemetery in which Matthew Thornton is buried, "are equally worthy of landmark recognition."

Thornton Graveyard

The Thornton Graveyard is situated in the northwest quadrant of the Greeley Street/US 3 DWY intersection. It is the oldest cemetery in Merrimack with stones dating from 1742. At least, 146 individuals were buried here. The property was once part of the original land holdings associated with Thornton. Giesecke (1978) noted, **"The first two rows of stones, as one faces east, were moved to the east during the widening of the highway in the late 1950's.** Giesecke (1978) noted, the remainder of the cemetery appears undisturbed although there are gaps and collapsed graves which may indicate missing stones. The cemetery retains the traditional east-west alignment of the period and three sides of the stone wall enclosure. The graves of Matthew Thornton and his immediate family, as well as other well-known historic residents, are interned here. For example, the cemetery includes the grave of Sarah Lutwyche, mother of Edward Lutwyche whose property and ferry across

the Merrimack were confiscated during the Revolution due to their Tory association. Members of the Park family, notable stonecutters and headstone carvers of Groton, MA are also buried here. A monument to Matthew Thornton was erected at the north end of the cemetery in 1835.

Thornton Graveyard Sign

☒ **No Potential to Cause Effect/No Concerns**

Impacts will be avoided in the parcels associated with the two National Register properties:

- the Signor's House (Matthew Thornton Homestead, now the Common Man Restaurant) in the Northwest quadrant, and
- the Thornton Graveyard in the Northeast quadrant.

The project work is to replacement the existing pipes in the same location with some slight elevation change.

☐ **Concerns:**

Below Ground Review

Recorded Archaeological site: ☐Yes ☒No

Nearest Recorded Archaeological Site Name & Number: 27-HB-0470 Naticook Brook II Site

☒Pre-Contact ☐Post-Contact

Distance from Project Area:
Approximately 1929 ft northwest of project area

☐ No Potential to Cause Effect/No Concerns

☒ **Concerns:**

While high archaeological potential is associated with the surrounding area, particularly in undisturbed soils below or adjacent to previously impacted areas or on the National Register nearby sites. Project design indicates all work is to replace the existing pipes in the same location with some slight elevation change.

If any actions are to occur in undisturbed soils or within 25 feet of the cemetery, archaeological monitoring or Phase IA/IB Archaeological Investigations will be needed. Please contact Sheila Charles, NHDOT Bureau of Environment Archaeologist (Sheila.Charles@dot.nh.gov or 603-27104949).

Archaeological Sensitivity of the Surrounding Area:

While high archaeological potential is associated with the surrounding area, particularly in undisturbed soils below or adjacent to previously impacted areas, project design indicates all work is to replace the existing pipes in the same location with some slight elevation change.

The high archaeological sensitivity of the surrounding area is due to the proximity of the Merrimack River, nearby identified Pre-Contact Period sites, and the known association in the region with Native Americans (including the Pennacooks), Although the 2017 Archaeological Phase IA/IB for the FEET widening (NHDOT 13761; Tumelaire and Wheeler 2017) does not include an assessment of the study area, it illustrates the Pre-Contact Archaeological potential of the surrounding area as 4 Native American sites were identified (Middle Segment MU-9).

The surrounding project area also has Post-Contact Archaeological potential, due to its early European-American settlement history. The National Register nomination for the Signor's House & Thornton Graveyard (Giesecke 1978) includes the following statement regarding archaeological sensitivity:

Archeological potential also exists at the house site. Glass and ceramic artifacts recovered from grading of the present parking lot are 19th century, but a very old stone-lined well and other evidences of foundations and out buildings were carefully covered and are preserved for future archeological investigation. This is of particular importance because very few sites remain in the rapidly developing Merrimack Valley of New Hampshire which may tell us about rural life in the late 18th and early 19th centuries. The location and patterns of the buildings and the association to the river and roads may yield information about land use, the relation of man to his environment, and even more, the locational patterns and artifacts recoverable from the area may tell us about early taverns, trade, building technology and domestic habits. The structure relates closely to the history of transportation in southern New Hampshire. From its earliest days, this building was a tavern serving both river and stagecoach traffic; the ferry across the Merrimack River was operated by the owner of the tavern. As a restaurant, it continued in appropriate use since, with the advent of the automobile, the need for taverns has vanished. It remains a useful, unique and visually pleasing component of the cultural landscape.

Thornton's Ferry Section of Town

In addition, Garvin (2003) stated with regard to the Thornton's Ferry section of town, " Garvin (2003) stated, "This significance could be enhanced by archaeological investigation, which may provide verification of the structure of the ferry landing, of a warehouse that was reportedly located at the ferry landing, and of the beginning and duration of the ferry's operation," as well as the material culture of the 18th and 19th centuries.

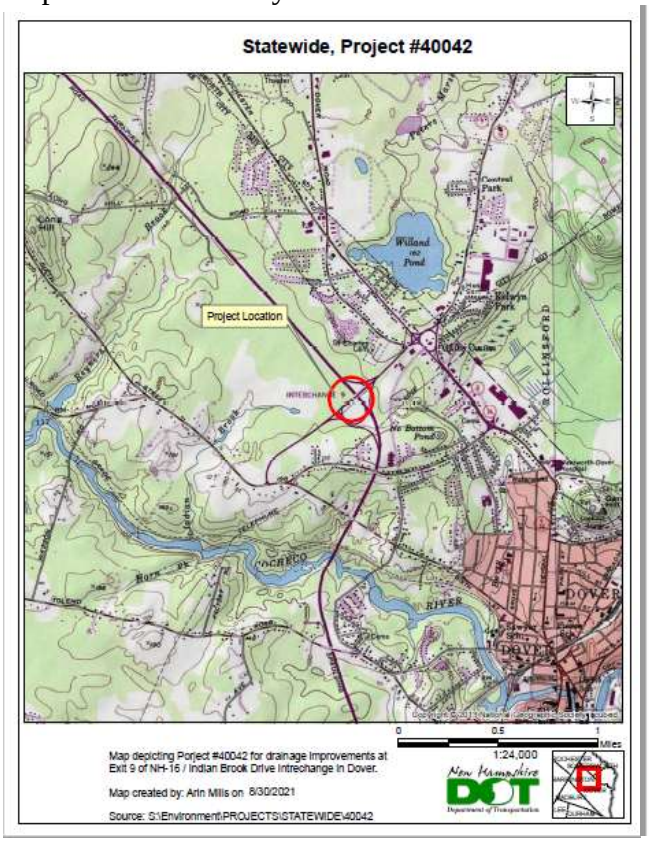
Cemetery Monitoring within 25' of the Thornton Graveyard

In addition**, i**f earth disturbing work must occur within 25' of the Thornton Graveyard, per RSA 289:3 III states the excavation shall be monitored by a 36 CFR 61 qualified archaeologist.

Depending on proposed activities and scheduling constraints, a consulting archaeological team or NHDOT BOE Cultural Resources Program Archaeologist Sheila Charles can be used to monitor the excavation activities in proximity to the cemetery. Authorization and sufficient notification will be needed to work with the archaeologist(s).

If a marked or unmarked burial is encountered, excavation shall be immediately discontinued. and the NHDOT BOE Cultural Resources Program (Sheila Charles/Jill Edelmann) shall be contacted for further instruction. If this occurs, the police, county medical examiner, NH State Archaeologist and the Department's Environmental Coordinator will be contacted. If additional archaeological investigation is warranted, the State Archaeologist will oversee the removal and analysis of the remains and has the responsibility of attempting to consult with the next of kin or Native American groups (RSA 227-C:8 a-g). These interested groups will have the right to determine what happens to the remains following analysis.

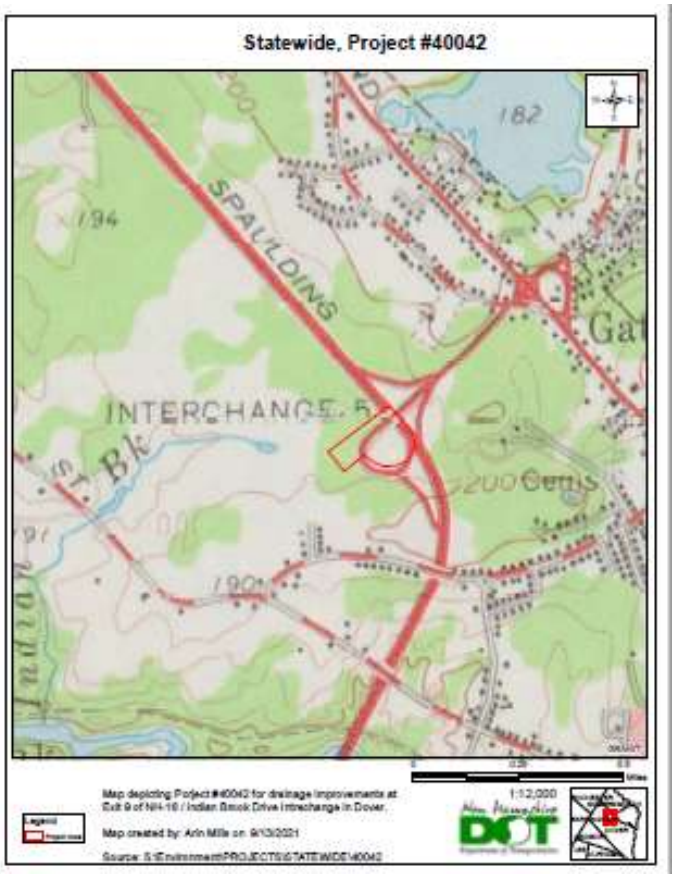
Location: Dover The work is to improve drainage deficiencies at SADES Culvert pipe #73021 near Mile Marker 12.3 south of Exit 9 off Indian Brook Drive. Turnpikes PM (Emily Polychronopoulos) indicated the Dover/Exit 9 was constructed about 1976. Two drainage pipes (24") will be repaired (#73021 and 73-xxx) and riprap lined outlet basins will be constructed along with new headways. Slip line repair deteriorations will be completed as necessary.



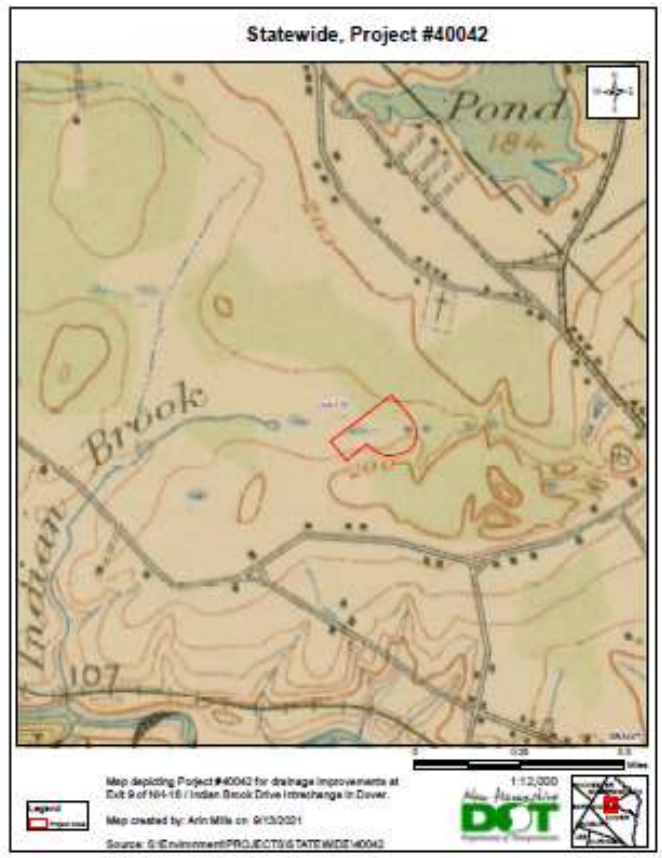
Looking northeast at Exit 9 Infield

Looking northeast at 73021 location

1956 Dover Topographic Quadrangle


Statewide, Project #40042
SPAULDINS
INTERCHANGE 9
Indian Brook
Map depicting Project #40042 for drainage improvements at Exit 9 of NH-16 / Indian Brook Drive Interchange in Dover.
Map created by: Arin Mills on: 9/13/2021
1:12,000

1918 USGS


Statewide, Project #40042
Pond
Indian Brook
Map depicting Project #40042 for drainage improvements at Exit 9 of NH-16 / Indian Brook Drive Interchange in Dover.
Map created by: Arin Mills on: 9/13/2021
1:12,000

Above Ground Review

EMMIT review was undertaken on 1/7/2021. No individual historic properties or districts are associated with the Dover project location.

The project area along the Spaulding Turnpike, named for Rochester brothers Roland H. Spaulding and Huntley N. Spaulding who both served as Governors of NH, opened in 1956-1957 and has been modified and expanded numerous times (including 1964-66, and 1983). Portions of the Spaulding Turnpike, including the project area, have been reviewed under Section 106 for architectural resources numerous times, including Benjamin- Ma 2018 (ZMT-SPTP), Laprey 2005; Hengen 1991 (ROC-OSTP).

SADES Culvert Pipe #73021; near Mile Marker 12.3 Exit 9: Indian Brook Drive. Turnpikes PM (Emily Polychronopoulos) indicated the Dover/Exit 9 was constructed about 1976. SADES data indicates the culvert pipe is concrete and 24".

☒ **No Potential to Cause Effect/No Concerns**

The two drainage pipes (24") will be repaired (#73021 and 73-xxx) and construction will include rip-rap lined outlet basins.

The Project applies to the Section 106 Programmatic Agreement Appendix B.

☐ Concerns:

Below Ground Review

Recorded Archaeological site: ☐Yes ☒No No archaeological sites identified in project location.

Nearest Recorded Archaeological Site Name & Number ☐Pre-Contact ☒Post-Contact
Kimball-Sterling Farm 27-ST-0068

Distance from Project Area: 3285' west of project location

☒ **No Potential to Cause Effect/No Concerns**

EMMIT review was undertaken on 1/7/2021. No archaeological sites have been identified in the project location.

Portions of the Spaulding Turnpike, including the project area, have been reviewed under Section 106 for archaeological resources numerous times, (including Bunker 2004; Tumelaire et al 2011; Tumelaire and Wheeler 2015). One review that included a portion of the project area was undertaken under the Contract Q and archaeological review was performed by IAC (Tumelaire and Wheeler 2015). Tumelaire and Wheeler (2015) and Cofelice et al (2014) conducted an intensive Phase IA and IB (237 STPs in the Contract Q project area) and identified a consistent pattern of extensive landscaping, disturbance to the natural topography, and a low probability for intact cultural resources in the area associated with the southernmost culvert location. **They recommended no further archaeological survey for this area.**

☐ Concerns:

Reviewed by:

Sheila Charles

NHDOT Cultural Resources Staff

12/24/2020; 1/11/2021, revised and updated 9.15.2021

Date:

US Army Corps of Engineers ®
New England District

New Hampshire General Permits (GPs)
Appendix B - Corps Secondary Impacts Checklist
(for inland wetland/waterway fill projects in New Hampshire)

1. Attach any explanations to this checklist. Lack of information could delay a Corps permit determination.
2. All references to "work" include all work associated with the project construction and operation. Work includes filling, clearing, flooding, draining, excavation, dozing, stumping, etc.
3. See GC 5, regarding single and complete projects.
4. Contact the Corps at (978) 318-8832 with any questions.

1. Impaired Waters	Yes	No
1.1 Will any work occur within 1 mile upstream in the watershed of an impaired water? See http://des.nh.gov/organization/divisions/water/wmb/section401/impaired_waters.htm to determine if there is an impaired water in the vicinity of your work area.*		X
2. Wetlands	Yes	No
2.1 Are there are streams, brooks, rivers, ponds, or lakes within 200 feet of any proposed work?		X
2.2 Are there proposed impacts to SAS, special wetlands. Applicants may obtain information from the NH Department of Resources and Economic Development Natural Heritage Bureau (NHB) DataCheck Tool for information about resources located on the property at https://www2.des.state.nh.us/nhb_datacheck/. The book Natural Community Systems of New Hampshire also contains specific information about the natural communities found in NH.		X
2.3 If wetland crossings are proposed, are they adequately designed to maintain hydrology, sediment transport & wildlife passage?	X	
2.4 Would the project remove part or all of a riparian buffer? (Riparian buffers are lands adjacent to streams where vegetation is strongly influenced by the presence of water. They are often thin lines of vegetation containing native grasses, flowers, shrubs and/or trees that line the stream banks. They are also called vegetated buffer zones.)		X
2.5 The overall project site is more than 40 acres?		X
2.6 What is the area of the previously filled wetlands?		
2.7 What is the area of the proposed fill in wetlands?		
2.8 What is the % of previously and proposed fill in wetlands to the overall project site?		
3. Wildlife	Yes	No
3.1 Has the NHB & USFWS determined that there are known occurrences of rare species, exemplary natural communities, Federal and State threatened and endangered species and habitat, in the vicinity of the proposed project? (All projects require an NHB ID number & a USFWS IPAC determination.) NHB DataCheck Tool: https://www2.des.state.nh.us/nhb_datacheck/ USFWS IPAC website: https://ecos.fws.gov/ipac/location/index	X	

3.2 Would work occur in any area identified as either "Highest Ranked Habitat in N.H." or "Highest Ranked Habitat in Ecological Region"? (These areas are colored magenta and green, respectively, on NH Fish and Game's map, "2010 Highest Ranked Wildlife Habitat by Ecological Condition.") Map information can be found at: • PDF: www.wildlife.state.nh.us/Wildlife/Wildlife_Plan/highest_ranking_habitat.htm. • Data Mapper: www.granit.unh.edu. • GIS: www.granit.unh.edu/data/downloadfreedata/category/databycategory.html.		X
3.3 Would the project impact more than 20 acres of an undeveloped land block (upland, wetland/waterway) on the entire project site and/or on an adjoining property(s)?		X
3.4 Does the project propose more than a 10-lot residential subdivision, or a commercial or industrial development?		X
3.5 Are stream crossings designed in accordance with the GC 21?		X
4. Flooding/Floodplain Values	Yes	No
4.1 Is the proposed project within the 100-year floodplain of an adjacent river or stream?		X
4.2 If 4.1 is yes, will compensatory flood storage be provided if the project results in a loss of flood storage?		
5. Historic/Archaeological Resources		
For a minimum, minor or major impact project - a copy of the Request for Project Review (RPR) Form (www.nh.gov/nhdhr/review**)** with your DES file number shall be sent to the NH Division of Historical Resources as required on Page 11 GC 8(d) of the GP document**	X	

*Although this checklist utilizes state information, its submittal to the Corps is a Federal requirement.
** If your project is not within Federal jurisdiction, coordination with NH DHR is not required under Federal law.
`

Photo 1: Looking Northeast Toward NH-16 / Exit 9 Infield (South side of Indian Brook Dr)

Photo 2: Looking Southwest in ROW (North side of Indian Brook Dr)

Photo 3: Looking North at Pipe #73021 Outlet (Wetland Impact 1A)

Photo 4: Looking North at Pipe #73-XXX outlet (Wetland Impact 1B)

Photo 5: Looking Southwest Above Pipe 73-XXX Inlet

Photo 6: Looking Northeast at Pipe #73-XXX Inlet (Wetland Impact 2C)

NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES

WETLAND PERMIT APPLICATION

for

DRAINAGE CULVERT REPAIRS – CULVERT NO.'S 73021 AND 73-XXX ; SPAULDING TURNPIKE, EXIT 9

DOVER, NH

PROPOSED CONSTRUCTION SEQUENCE

1. Install traffic control and signage as required to protect the construction access and staging areas on Indian Brook Drive.
2. Install Perimeter Control (PC) silt fence at the limits of work along the wetlands on the north and south sides of Indian Brook Drive, and timber mats (or similar as accepted by The Engineer) within temporary impact areas as needed.
3. Construct gravel access path including tree removal.
4. Install excavation dewatering system at Culvert 73021 outlet area.
5. Excavate and cut into existing Culvert 73021 at station 65+50 and clean out as much pipe sedimentation & debris as possible in both directions from this location and from the inlet catch basin.
6. Excavate the (buried) outlet of Culvert 73021 to expose the full pipe end section and remove the remaining sedimentation and debris from within the pipe barrel.
7. Perform CCTV inspection of entire length of Culvert 73021.
8. After evaluation of the CCTV inspection, install segmental HDPE Slip-line into Culvert 73021 or perform repairs as directed by The Engineer.
9. Install intermediate manhole in Culvert 73021 at station 65+50 and stabilize disturbed areas as directed by the Engineer.
10. Construct outlet basin, headwall, and slope retaining wall at outlet of Culvert 73021.
11. Remove excavation dewatering system at Culvert 73021.
12. Restore temporary wetland impact area at Culvert 73021 to original grade contours and reseed with specified wetland seed mix.
13. Stabilize eastern segment of access path surfaces upslope of the restored wetlands impact area for Culvert 73021 as directed by The Engineer.
14. Install excavation dewatering system at Culvert 73-XXX outlet area.

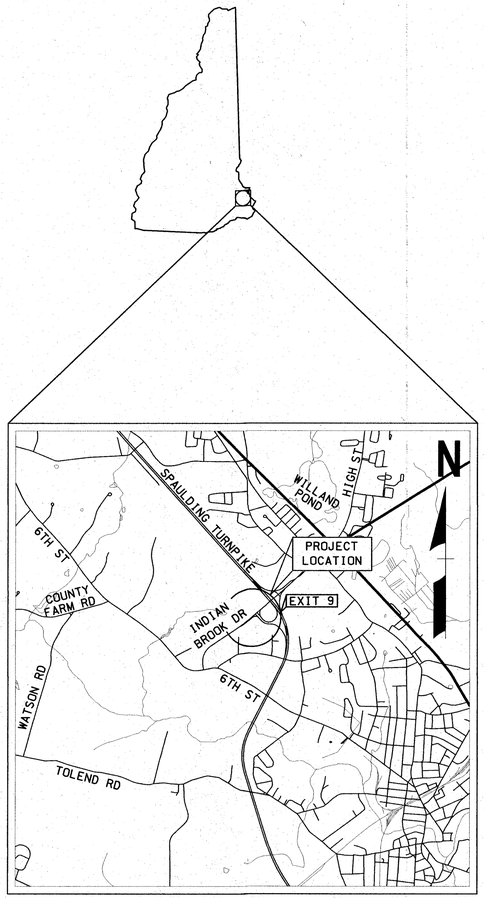
15. Excavate the (buried) outlet of Culvert 73-XXX to expose the full pipe end section and clean out as much pipe sedimentation & debris as possible from within the pipe barrel.
16. Remove debris , branches, etc. from Culvert 73-XXX inlet area and clean out any remaining sedimentation or debris in pipe barrel.
17. Perform CCTV inspection of entire length of Culvert 73-XXX.
18. Perform repairs to Culvert 73-XXX as directed by The Engineer based on CCTV inspection results.
19. Construct outlet basin and headwall at outlet of Culvert 73-XXX.
20. Restore temporary wetland impact area at Culvert 73021 to original grade contours and reseed with specified wetland seed mix.
21. Stabilize access path surfaces as directed by The Engineer.
22. After stabilization of access path and restored temporary wetlands impact areas, remove Perimeter Control (PC) silt fence at the limits of work along the wetlands on the north and south sides of Indian Brook Drive.

STATE OF NEW HAMPSHIRE
DEPARTMENT OF TRANSPORTATION

WETLANDS PLANS

NHDOT PROJECT NUMBER 40042
CULVERT REPAIRS
SADES# 73021 & 73-XXX

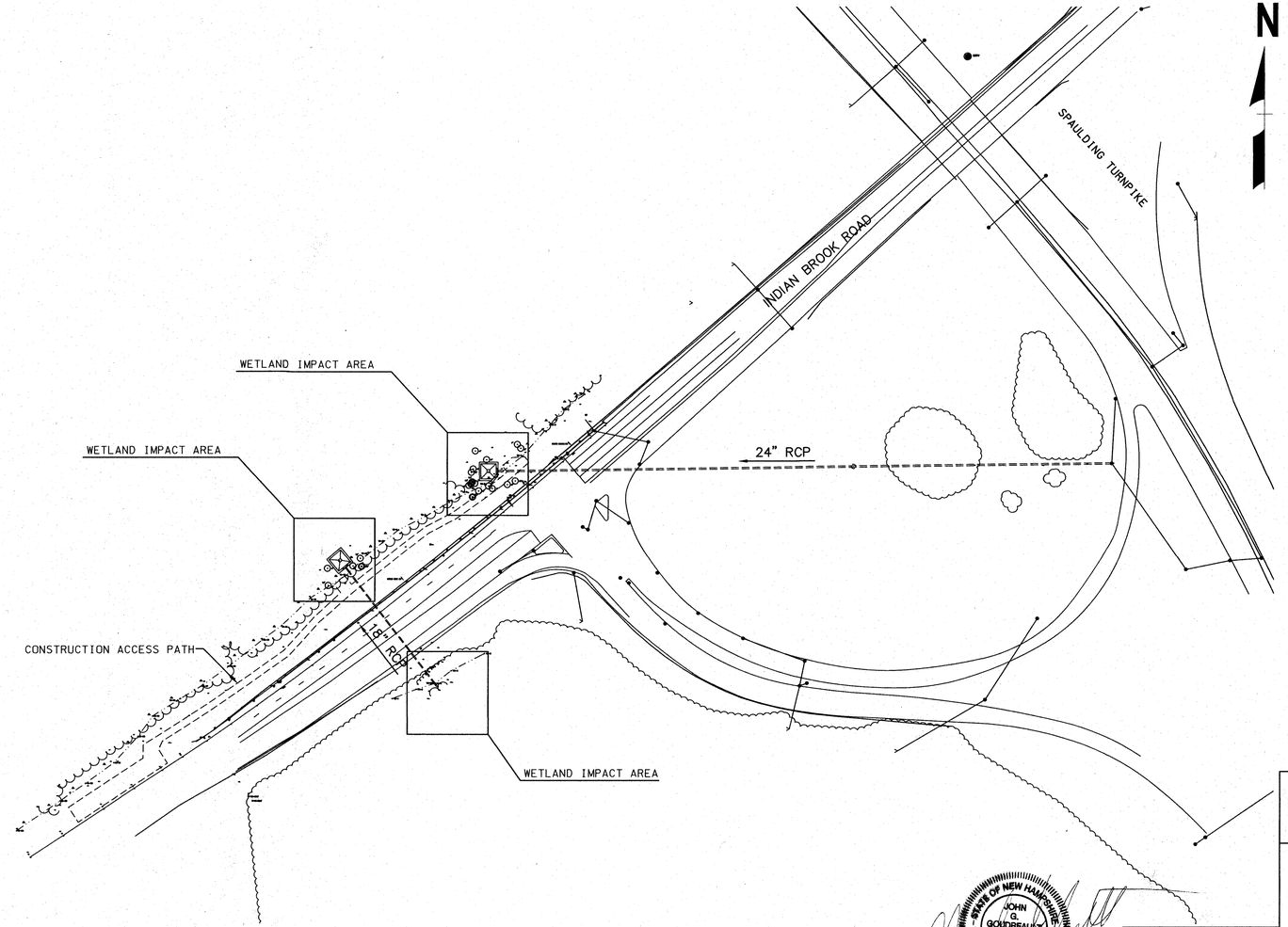
SHEET LIST	
SHEET	TITLE
1	FRONT SHEET
2-3	STANDARD SYMBOLS
4	WETLAND IMPACT SUMMARY AND LEGEND
5-7	WETLAND IMPACT PLANS
8	EROSION CONTROL STRATEGIES
9	EROSION CONTROL PLAN



LOCATION MAP

.5 0 .5 1

SCALE IN MILES



TOWN OF DOVER
COUNTY OF STRAFFORD
SCALE: 1" = 100'-0"

STATE OF NEW HAMPSHIRE
JOHN G. GOUDREAULT
No. 11469
LICENSED
PROFESSIONAL ENGINEER

DRAWN BY J.MCQUAID DATE 10/18/21
CHECKED BY J.GOUDREAULT DATE 10/18/21

NHDOT THE STATE OF NEW HAMPSHIRE DEPARTMENT OF TRANSPORTATION

RECOMMENDED FOR APPROVAL:

DIRECTOR OF PROJECT DEVELOPMENT — DATE

APPROVED:

ASSISTANT COMMISSIONER AND CHIEF ENGINEER — DATE

AECOM
1155 ELM ST. SUITE 401
MANCHESTER, NH 03101
DATE 10/22/21

FEDERAL PROJECT NO.	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
	40042	1	9

GENERAL

EDGE OF PAVEMENT — PROPOSED ROADWAY
TRAVELED WAY — existing roadway — (pavement removed outside slope lines)

DRIVEWAYS — (label surface type)

BUILDINGS — (building to be removed)
(label house or type of building)

FOUNDATION — (label type)

LEACH FIELD — leach field

BRIDGE CROSSINGS — STREAM — OVERPASS

STEPS AND WALK — (label type)

INTERMITTENT WATER COURSE

SHORE LINE — river/stream — pond — (label name of water body)

POTENTIAL WET AREA SYMBOL

BRUSH OR WOODS LINE

TREES (PLANS) — (deciduous) (coniferous) (stump)
TREE OR STUMP (CROSS-SECTIONS) — (show station, circumference in feet & type)

HEDGE — (label type)

MONITORING WELL — mon W

WELL — W

FLAG POLE — fp

ORIGINAL GROUND (TYPICALS)

ROCK OUTCROP

ROCK LINE (TYPICALS & SECTIONS ONLY)

GUARDRAIL (label type) — existing: bgr, cgr — PROPOSED

JERSEY BARRIER

CURB (LABEL TYPE)

STONE WALL

RETAINING WALL (LABEL TYPE) — (points toward retained ground)

FENCE (LABEL TYPE)

SIGNS — (single post) — (double post)

GAS PUMP — gp

FUEL TANK (ABOVE GROUND) — ft (label size & type)

STORAGE TANK FILLER CAP — fc

SEPTIC TANK — S

GRAVE — gr

MAILBOX — mb

VENT PIPE — vp

SATELLITE DISH ANTENNA — da

PHONE — ph

GROUND LIGHT/LAMP POST — gl — lp

BORING LOCATION — B

TEST PIT — TP

INTERSTATE NUMBERED HIGHWAY — 293

UNITED STATES NUMBERED HIGHWAY — 3

STATE NUMBERED HIGHWAY — 102

SHORELAND - WETLAND

WETLAND DESIGNATION AND TYPE — 2 PUB2E

DELINEATED WETLAND
ORDINARY HIGH WATER
TOP OF BANK
TOP OF BANK & ORDINARY HIGH WATER
NORMAL HIGH WATER — NHW
WIDTH AT BANK FULL — WBF
PRIME WETLAND
PRIME WETLAND 100' BUFFER — PWET100
NON-JURISDICTIONAL DRAINAGE AREA — NJDA
COWARDIN DISTINCTION LINE — CDL
TIDAL BUFFER ZONE
DEVELOPED TIDAL BUFFER ZONE — DTBZ
HIGHEST OBSERVABLE TIDE LINE
MEAN HIGH WATER — MHW
MEAN LOW WATER — MLW
VERNAL POOL
SPECIAL AQUATIC SITE
REFERENCE LINE — REF
WATER FRONT BUFFER
NATURAL WOODLAND BUFFER
PROTECTED SHORELAND
INVASIVE SPECIES LABEL — I.S. I — I.S. II
INVASIVE SPECIES

FLOODPLAIN / FLOODWAY

500 YEAR FLOODPLAIN BOUNDARY
100 YEAR FLOODPLAIN BOUNDARY
FLOODWAY

ENGINEERING

CONSTRUCTION BASELINE — 30 — 31 — 32
PC, PT, POT (ON CONST BASELINE)
PI (IN CONSTRUCTION BASELINES)
INTERSECTION OR EQUATION OF TWO LINES
ORIGINAL GROUND LINE (PROFILES AND CROSS-SECTIONS)
PROFILE GRADE LINE (PROFILES AND CROSS-SECTIONS)

SLOPE LINE — CLEARING LINE
CLEARING LINE
SLOPE LINE

SLOPE LINE (FILL)
SLOPE LINE (CUT)

PROFILES AND CROSS SECTIONS:
ORIGINAL GROUND ELEVATION (LEFT) — 72.5
FINISHED GRADE ELEVATION (RIGHT) — 79.14

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STATE OF NEW HAMPSHIRE
TOWN OF DOVER
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF TURNPIKES

STANDARD SYMBOLS - SHEET 1 OF 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042SYMB.dgn	40042	2	9

DATE: 10/22/21

DRAINAGE

MANHOLE

CATCH BASIN — cb

DROP INLET — di

(existing) (PROPOSED)

DRAINAGE PIPE (existing) (label size & type)

DRAINAGE PIPE (PROPOSED)

UNDERDRAIN (existing) W/ FLUSHING BASIN — fb (label size & type)

UNDERDRAIN (PROPOSED) W/ FLUSHING BASIN

show direction of flow

HEADER (existing & PROPOSED) (with stone outlet protection)

END SECTION (existing & PROPOSED) METAL or PLASTIC, RCP

OPEN DITCH (PROPOSED)

EROSION CONTROL/ STONE SLOPE PROTECTION

BOUNDARIES / RIGHT-OF-WAY

RIGHT-OF-WAY LINE (label type)

RR RIGHT-OF-WAY LINE

PROPERTY LINE

PROPERTY LINE (COMMON OWNER)

TOWN LINE — BOW / CONCORD

COUNTY LINE — COOS / GRAFTON

STATE LINE — MAINE / NEW HAMPSHIRE

NATIONAL FOREST

CONSERVATION LAND — LC

BENCH MARK / SURVEY DISK

BOUND — bnd (PROPOSED)

STATE LINE/ TOWN LINE MONUMENT — S/L T/L

NHDOT PROJECT MARKER

IRON PIPE OR PIN — ip

DRILL HOLE IN ROCK — dh

TAX MAP AND LOT NUMBER — 156 / 14, 1642/341, 6.80 Ac.±

PROPERTY PARCEL NUMBER — 12

HISTORIC PROPERTY — H

UTILITIES

existing PROPOSED

TELEPHONE POLE

POWER POLE

JOINT OCCUPANCY

MISCELLANEOUS/UNKNOWN POLE

GUY POLE OR PUSH BRACE

(plot point at face not center of symbol)

LIGHT POLE

LIGHT ON POWER POLE

LIGHT ON JOINT POLE

POLE STATUS: REMOVE, LEAVE, PROPOSED, OR TEMPORARY AS APPLICABLE e.g.: R L, P+04 25.0', T+04 25.0'

RAILROAD (label ownership)

RAILROAD SIGN

RAILROAD SIGNAL

UTILITY JUNCTION BOX — jb JB

OVERHEAD WIRE — OW (label type)

UNDERGROUND UTILITIES

WATER (on existing lines label size, type and note if abandoned)

SEWER

TELEPHONE

ELECTRIC

GAS

LIGHTING

INTELLIGENT TRANSPORTATION SYSTEM

FIBER OPTIC

WATER SHUT OFF — WSO

GAS SHUT OFF — GSO

HYDRANT — HYD

MANHOLES

SEWER — S — MHS

TELEPHONE — T — MHT

ELECTRICAL — E — MHE

GAS — G — MHG

UNKNOWN — U

TRAFFIC SIGNALS / ITS

existing PROPOSED

MAST ARM (existing) — 30' MA (NOTE ANGLE FROM ℄)

OPTICOM RECEIVER

OPTICOM STROBE

TRAFFIC SIGNAL

PEDESTAL WITH PEDESTRIAN SIGNAL HEADS AND PUSH BUTTON UNIT

SIGNAL CONDUIT

CONTROLLER CABINET — cc CC

METER PEDESTAL — mp MP

PULL BOX — pb PB

LOOP DETECTOR (QUADRUPOLE) (label size)

LOOP DETECTOR (RECTANGULAR) (label size)

CAMERA POLE (CCTV)

FIBER OPTIC DELINEATOR — fod FOD

FIBER OPTIC SPLICE VAULT — SVF

ITS EQUIPMENT CABINET — its ITS

VARIABLE SPEED LIMIT SIGN

DYNAMIC MESSAGE SIGN

ROAD AND WEATHER INFO SYSTEM

CONSTRUCTION NOTES

CURB MARK NUMBER - BITUMINOUS	B-1
CURB MARK NUMBER - GRANITE	G-1
CLEARING AND GRUBBING AREA	A
DRAINAGE NOTE	1
EROSION CONTROL NOTE	A
FENCING NOTE	A
GUARDRAIL NOTE	1
ITS NOTE	1
LIGHTING NOTE	A
TRAFFIC SIGNAL NOTE	1

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TOWN OF DOVER
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STANDARD SYMBOLS - SHEET 2 OF 2

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042SYMB.dgn	40042	3	9

DATE: 10/22/21

WETLANDS IMPACT LEGEND

- TEMPORARY WETLAND IMPACTS
- PERMANENT WETLAND IMPACTS
- (1) WETLAND DESIGNATION NUMBER
- [X] WETLAND IMPACT LOCATION
- △W1-X WETLAND FLAG DESIGNATION

EROSION CONTROL PLAN LEGEND

PC — PERIMETER CONTROL
SILT FENCE
EROSION CONTROL MIX BERM
EROSION CONTROL MIX SOX
TURBIDITY CURTAIN
SHEET PILE
COFFER DAM

NB/PC — NATURAL BUFFER/PERIMETER CONTROL
SILT FENCE
EROSION CONTROL MIX BERM
EROSION CONTROL MIX SOX
TURBIDITY CURTAIN
SHEET PILE
COFFER DAM

CP — CHANNEL PROTECTION
STONE CHECK DAMS
STRAW WATTLES
CHANNEL MATTING
CLASS D EROSION STONE
CLASS C STONE

CWB — CLEAN WATER BYPASS
PUMP THROUGH PIPE
DRAIN THROUGH PIPE OR CHANNEL

WETLAND DELINEATION NOTES:

1. WETLANDS NO. 1 (LOCATION A & B) DELINEATED ON OCTOBER 27 AND 28, 2020 BY TERRY RAMBORGER, NH CWS #13 USING USACE THREE-PARAMETER METHODOLOGY IN ACCORDANCE WITH USACE 1987 DELINEATION MANUAL.
2. WETLAND NO. 2 (LOCATION C) DELINEATED ON APRIL 28, 2021 BY TOM TOUCHET, NH CWS #314 USING USACE THREE-PARAMETER METHODOLOGY IN ACCORDANCE WITH USACE 1987 DELINEATION MANUAL.
3. THE AREA WITHIN THE LIMITS OF WORK AT CULVERT LOCATION 73021 IS PALUSTRINE EMERGENT MARSH (PEM1). HOWEVER, THE LARGER SURROUNDING WETLAND IS PRIMARILY PALUSTRINE FORESTED WETLAND (PFO1).
4. THE AREA WITHIN THE LIMITS OF WORK AT CULVERT LOCATION 73-XXX IS A COMBINATION OF PALUSTRINE EMERGENT MARSH (PEM1) AND PALUSTRINE FORESTED WETLAND (PFO1). HOWEVER, THE LARGER SURROUNDING WETLAND IS PRIMARILY PALUSTRINE FORESTED WETLAND (PFO1).

STATE OF NEW HAMPSHIRE — TERRY C. RAMBORGER — No. 013 — WETLANDS SCIENTIST

STATE OF NEW HAMPSHIRE — THOMAS J. TOUCHET — No. 314 — WETLAND SCIENTIST

WETLAND IMPACT SUMMARY

WETLAND NUMBER	WETLAND CLASSIFICATION*	LOCATION	AREA PERMANENT IMPACTS N.H.W.B. & A.C.O.E. (WETLAND) SF	AREA TEMPORARY IMPACTS SF
1	PEM1 (SEE NOTE 3)	A	928	2059
1	PFO1/PEM1 (SEE NOTE 4)	B	676	2070
2	PFO1	C		1500
		TOTAL	1604	5629

PERMANENT IMPACTS:	1604 SF
TEMPORARY IMPACTS:	5629 SF
TBZ IMPACTS:	0 SF
TOTAL IMPACTS:	7233 SF

*USFWS WETLAND CLASSIFICATION CODE:
PFO1 = PALUSTRINE (P) FORESTED (FO) BROAD-LEAVED DECIDUOUS (1)
PEM1 = PALUSTRINE (P) EMERGENT (EM) PERSISTENT (1)

FOR CONSTRUCTION AND ALIGNMENT DETAILS SEE CONSTRUCTION PLANS

STATE OF NEW HAMPSHIRE
TOWN OF DOVER
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF TURNPIKES

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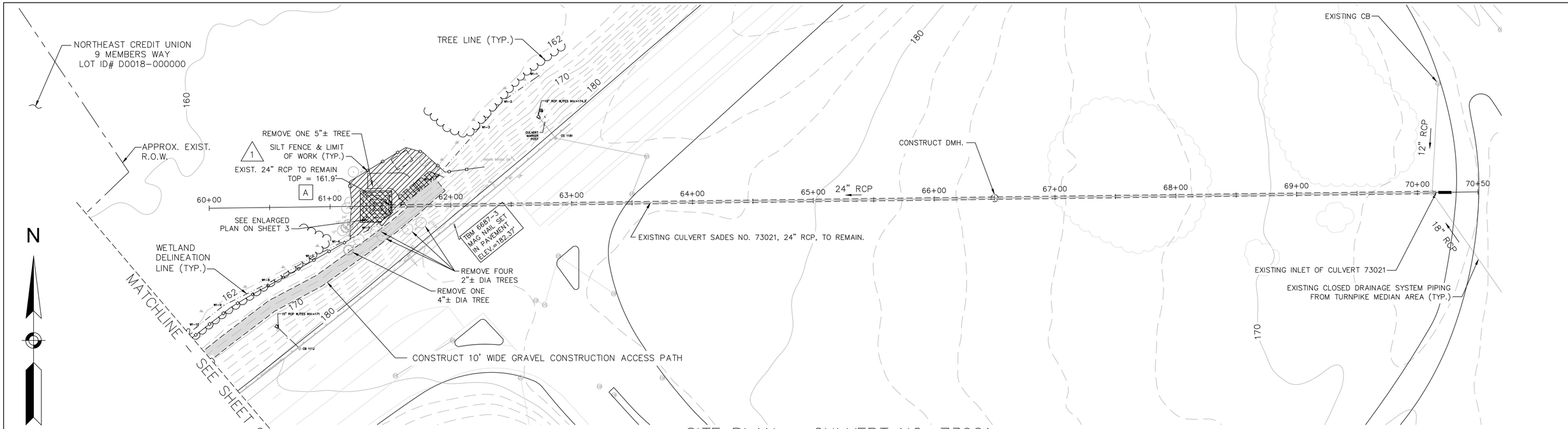
WETLAND IMPACT PLANS

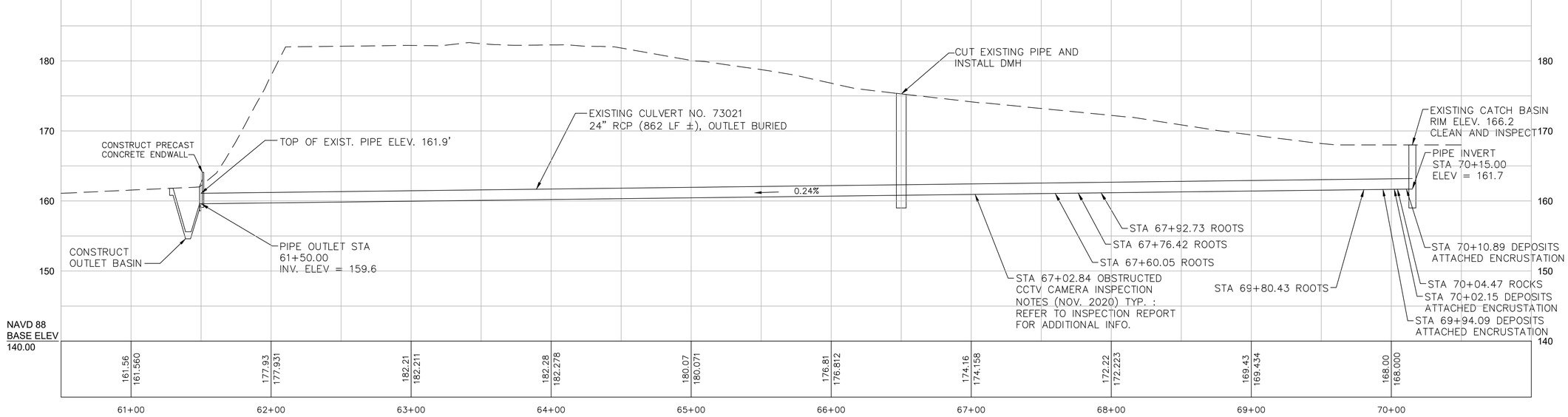
DWG	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042wetplan.dwg	40042	4	9

DATE 10/22/21



SITE PLAN – CULVERT NO. 73021

HOR. SCALE IN FEET
40 0 40 80



PROFILE – CULVERT NO. 73021

HOR. SCALE IN FEET
40 0 40 80
VER. SCALE IN FEET
8 0 8 16

NOTES:

1. ALL TEMPORARY WETLAND IMPACT AREAS SHALL BE RESTORED TO ORIGINAL GRADE CONTOURS AND RESEEDED WITH NHDOT SPECIFIED WETLAND SEED MIX.
2. THE CONTRACTOR SHALL PLAN AND MAKE CONTINGENCY PROVISIONS DURING CONSTRUCTION FOR POTENTIAL STORMWATER ACCUMULATION IN THE EXISTING CULVERTS RESULTING FROM PRECIPITATION EVENTS, IN ORDER TO PROTECT THE WORK AND PREVENT DISCHARGE OF SEDIMENT-LADEN WATER INTO WETLANDS AREAS.
3. EXCAVATED MUCK SHALL FOLLOW THE SOIL MANAGEMENT PLAN AND USE BEST MANAGEMENT PRACTICES. EXCAVATED MUCK CONTAINING INVASIVE SPECIES SHALL BE DRAINED OUTSIDE ANY JURISDICTIONAL AREA AND BE BURIED ON-SITE A MINIMUM OF 3' BELOW TOPSOIL OR STOCKPILED ON AN IMPERVIOUS SURFACE UNTIL VIABLE MATERIAL IS DESTROYED AND TAKEN OFF-SITE AT THE CONTRACTORS DISCRETION, ENSURING THEY ARE NOT PLACED BACK IN THE WETLAND.
4. LIMITED REUSE SOILS(LRS) WITHIN THE ROW THAT IS EXCAVATED SHALL REMAIN ON NHDOT-OWNED-PROPERTY AND OUT OF JURISDICTIONAL AREA.

FOR CONSTRUCTION AND ALIGNMENT DETAILS SEE CONSTRUCTION PLANS

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STATE OF NEW HAMPSHIRE
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WETLAND IMPACT PLANS

DWG	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042wetplan.dwg	40042	5	9

DATE 10/22/21

N

APPROX. EXIST. R.O.W.

REMOVE ONE 8"± DIA TREE

SEE ENLARGED PLAN ON SHEET 3

REMOVE ONE 4"± TREE

SILT FENCE & LIMIT OF WORK (TYP.)

CONSTRUCT 10' WIDE GRAVEL CONSTRUCTION ACCESS PATH

TREE LINE (TYP.)

WETLAND DELINEATION LINE (TYP.)

NORTHEAST CREDIT UNION
9 MEMBERS WAY
LOT ID# D0018-000000

END OF EXIST. GUARDRAIL

18" RCP INV.=165.7'

TBM 6687-1
MAG NAIL SET
IN PAVEMENT
ELEV.=179.73'

BEGIN CONSTRUCTION STAGING / ACCESS POINT, 50 FT BEYOND END OF GUARDRAIL

LIMIT OF 25 FT WIDE X 150 FT LONG CONSTRUCTION STAGING AREA,

APPROX. EXIST. R.O.W.

UMUGWANGWALI BEATA,
15 WILBROD AVE, DOVER.
LOT ID# D0018-010000

18" RCP TOP=161.4'
STA. 71+50 OUTLET OF CULVERT 73-XXX

MATCHLINE - SEE SHEET 5

15" RCP N/ES INV.=171.9'

CB 1155

CB 1154

TBM 6687-2
MAG NAIL SET
IN PAVEMENT
ELEV.=178.51'

INDIAN BROOK DRIVE

EXISTING CULVERT SADES NO. (UNKNOWN) 73-XXX
18" RCP, TO REMAIN

STA. 73+60 INLET OF CULVERT 73-XXX

18" RCP INV.=162.1'

WETLAND DELINEATION LINE (TYP.)

EXISTING CULVERT TO REMAIN. CONTRACTOR SHALL EXERCISE CARE TO PREVENT DAMAGE RESULTING FROM CONSTRUCTION ACTIVITY

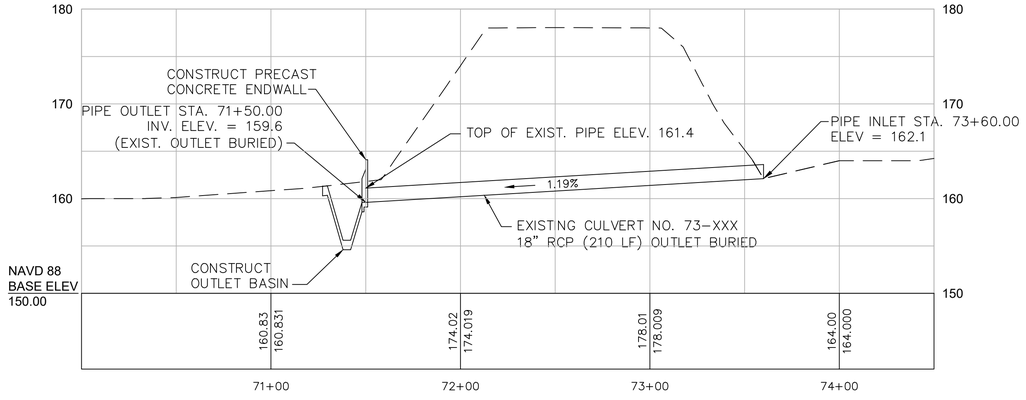
18" RCP INV.=165.3'

71+00 72+00 73+00 74+00

160 162 170 180

SITE PLAN - CULVERT NO. 73-XXX

HOR. SCALE IN FEET
40 0 40 80



PROFILE - CULVERT 73-XXX

HOR. SCALE IN FEET
40 0 40 80
8 0 8 16
VER. SCALE IN FEET

NOTES:

1. ALL TEMPORARY WETLAND IMPACT AREAS SHALL BE RESTORED TO ORIGINAL GRADE CONTOURS AND RESEEDED WITH NHDOT SPECIFIED WETLAND SEED MIX.
2. THE CONTRACTOR SHALL PLAN AND MAKE CONTINGENCY PROVISIONS DURING CONSTRUCTION FOR POTENTIAL STORMWATER ACCUMULATION IN THE EXISTING CULVERTS RESULTING FROM PRECIPITATION EVENTS, IN ORDER TO PROTECT THE WORK AND PREVENT DISCHARGE OF SEDIMENT-LADEN WATER INTO WETLANDS AREAS.
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4. LIMITED REUSE SOILS(LRS) WITHIN THE ROW THAT IS EXCAVATED SHALL REMAIN ON NHDOT-OWNED-PROPERTY AND OUT OF JURISDICTIONAL AREA.

FOR CONSTRUCTION AND ALIGNMENT DETAILS SEE CONSTRUCTION PLANS

STATE OF NEW HAMPSHIRE
TOWN OF DOVER
DEPARTMENT OF TRANSPORTATION ∘ BUREAU OF TURNPIKES

WETLAND IMPACT PLANS

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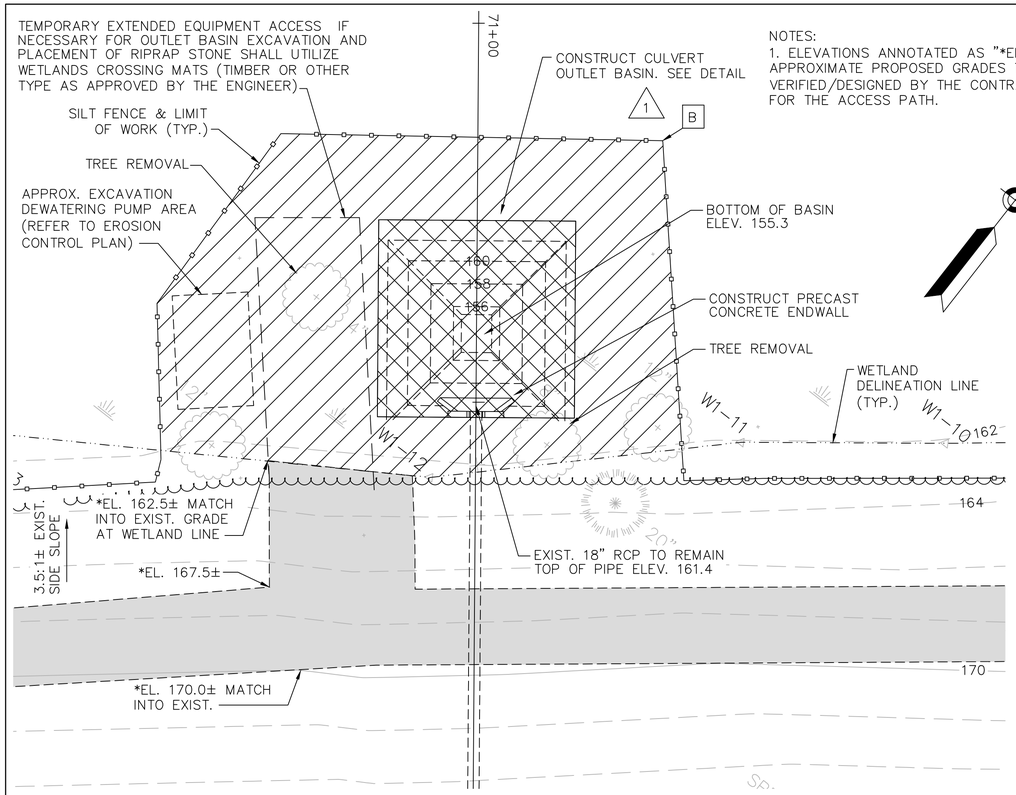
DWG	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042wetplan.dwg	40042	6	9

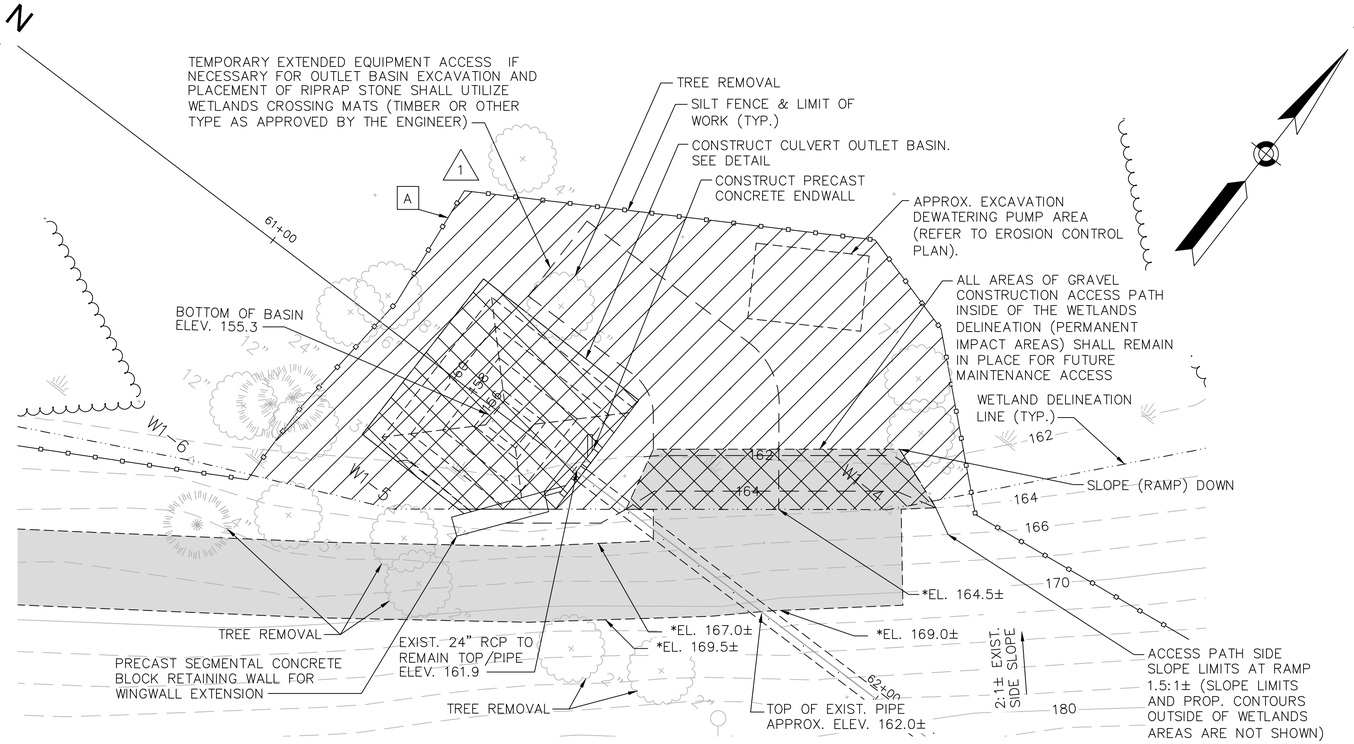
DATE 10/22/21



NOTES:
1. ELEVATIONS ANNOTATED AS "*EL." ARE APPROXIMATE PROPOSED GRADES TO BE VERIFIED/DESIGNED BY THE CONTRACTOR FOR THE ACCESS PATH.

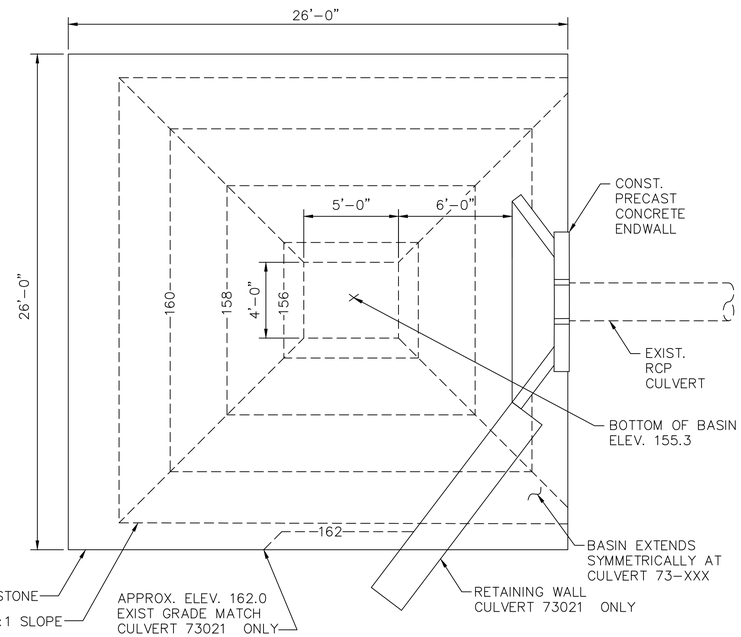
ENLARGED SITE PLAN – CULVERT NO. NO. 73–XXX

HOR. SCALE IN FEET
10 0 10 20



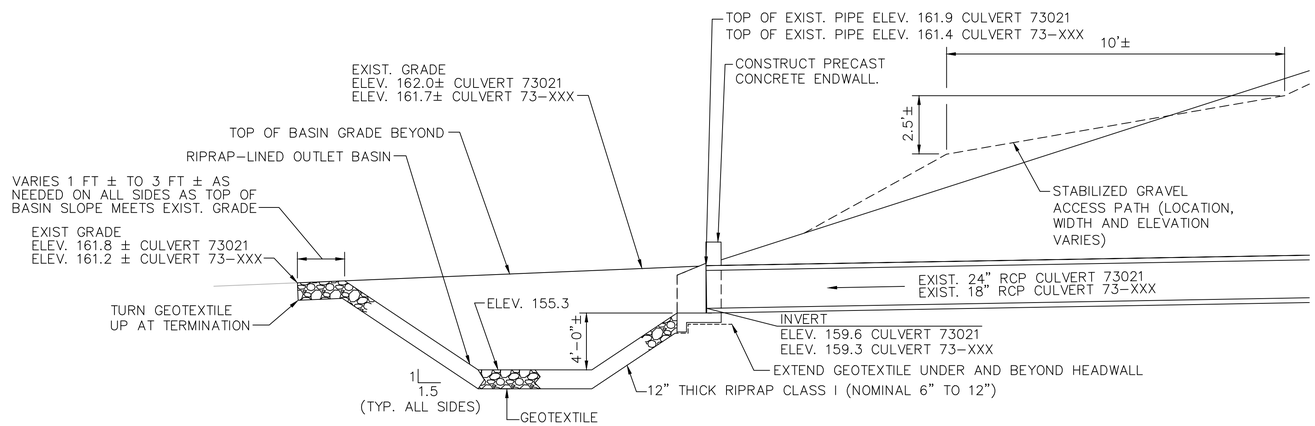
ENLARGED SITE PLAN – CULVERT NO. 73021

HOR. SCALE IN FEET
10 0 10 20



TYPICAL OUTLET BASIN DETAIL – PLAN

NOT TO SCALE



NOTE: SEDIMENT AND/OR DEBRIS MAY ACCUMULATE IN OUTLET BASIN AND WILL REQUIRE PERIODIC MAINTENANCE / CLEANING FOR LONG–TERM OPERATION.

TYPICAL OUTLET BASIN DETAIL – SECTION

NOT TO SCALE

FOR CONSTRUCTION AND ALIGNMENT DETAILS SEE CONSTRUCTION PLANS

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STATE OF NEW HAMPSHIRE
TOWN OF DOVER
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF TURNPIKES

WETLAND IMPACT PLANS DETAILS

DWG	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042wetplan.dwg	40042	7	9
DATE 10/22/21			

EROSION CONTROL STRATEGIES

1. ENVIRONMENTAL COMMITMENTS:
   1.1. THESE GUIDELINES DO NOT RELIEVE THE CONTRACTOR FROM COMPLIANCE WITH ANY CONTRACT PROVISIONS, OR APPLICABLE FEDERAL, STATE, AND LOCAL REGULATIONS.
   1.2. THIS PROJECT WILL BE SUBJECT TO THE US EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORM WATER CONSTRUCTION GENERAL PERMIT AS ADMINISTERED BY THE ENVIRONMENTAL PROTECTION AGENCY (EPA). THIS PROJECT IS SUBJECT TO REQUIREMENTS IN THE MOST RECENT CONSTRUCTION GENERAL PERMIT (CGP).
   1.3. THE CONTRACTOR'S ATTENTION IS DIRECTED TO THE NHDES WETLAND PERMIT, THE US ARMY CORPS OF ENGINEERS PERMIT, WATER QUALITY CERTIFICATION AND THE SPECIAL ATTENTION ITEMS INCLUDED IN THE CONTRACT DOCUMENTS.
   1.4. ALL STORM WATER, EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH THE NEW HAMPSHIRE STORMWATER MANUAL, VOLUME 3, EROSION AND SEDIMENT CONTROLS DURING CONSTRUCTION (DECEMBER 2008) (BMP MANUAL) AVAILABLE FROM THE NEW HAMPSHIRE DEPARTMENT OF ENVIRONMENTAL SERVICES (NHDES).
   1.5. THE CONTRACTOR SHALL COMPLY WITH RSA 485-A:17, AND ALL, PUBLISHED NHDES ALTERATION OF TERRAIN ENV-WQ 1500 REQUIREMENTS (HTTP://DES.NH.GOV/ORGANIZATION/COMMISSIONER/LEGAL/RULES/INDEX.HTM)
   1.6. THE CONTRACTOR IS DIRECTED TO REVIEW AND COMPLY WITH SECTION 107.1 OF THE CONTRACT AS IT REFERS TO SPILLAGE, AND ALSO WITH REGARDS TO EROSION, POLLUTION, AND TURBIDITY PRECAUTIONS.

2. STANDARD EROSION CONTROL SEQUENCING APPLICABLE TO ALL CONSTRUCTION PROJECTS:
   2.1. PERIMETER CONTROLS SHALL BE INSTALLED PRIOR TO EARTH DISTURBING ACTIVITIES. PERIMETER CONTROLS AND STABILIZED CONSTRUCTION EXITS SHALL BE INSTALLED AS SHOWN IN THE BMP MANUAL AND AS DIRECTED BY THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP) PREPARER.
   2.2. EROSION, SEDIMENTATION CONTROL MEASURES AND INFILTRATION BASINS SHALL BE CLEANED, REPLACED AND AUGMENTED AS NECESSARY TO PREVENT SEDIMENTATION BEYOND PROJECT LIMITS THROUGHOUT THE PROJECT DURATION.
   2.3. EROSION AND SEDIMENT CONTROL MEASURES SHALL BE INSPECTED IN ACCORDANCE WITH THE CONSTRUCTION GENERAL PERMIT AND SECTION 645 OF THE NHDOT SPECIFICATIONS FOR ROAD AND BRIDGES CONSTRUCTION.
   2.4. AN AREA SHALL BE CONSIDERED STABLE IF ONE OF THE FOLLOWING HAS OCCURRED:
      (A) BASE COURSE GRAVELS HAVE BEEN INSTALLED IN AREAS TO BE PAVED;
      (B) A MINIMUM OF 85% VEGETATED GROWTH HAS BEEN ESTABLISHED;
      (C) A MINIMUM OF 3" OF NON-EROSIVE MATERIAL SUCH AS STONE OR RIP-RAP HAS BEEN INSTALLED;
      (D) TEMPORARY SLOPE STABILIZATION CONFORMING TO TABLE 1 HAS BEEN PROPERLY INSTALLED
   2.5. ALL STOCKPILES SHALL BE CONTAINED WITH A PERIMETER CONTROL. IF THE STOCKPILE IS TO REMAIN UNDISTURBED FOR MORE THAN 14 DAYS, MULCHING WILL BE REQUIRED.
   2.6. A WATER TRUCK SHALL BE AVAILABLE TO CONTROL EXCESSIVE DUST AT THE DIRECTION OF THE CONTRACT ADMINISTRATOR.
   2.7. TEMPORARY EROSION AND SEDIMENTATION CONTROL MEASURES SHALL REMAIN UNTIL THE AREA HAS BEEN PERMANENTLY STABILIZED.
   2.8. CONSTRUCTION PERFORMED ANY TIME BETWEEN NOVEMBER 30" AND MAY 1" OF ANY YEAR SHALL BE CONSIDERED WINTER CONSTRUCTION AND SHALL CONFORM TO THE FOLLOWING REQUIREMENTS.
      (A) ALL PROPOSED VEGETATED AREAS WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED IN ACCORDANCE WITH TABLE 1.
      (B) ALL DITCHES OR SWALES WHICH DO NOT EXHIBIT A MINIMUM OF 85% VEGETATIVE GROWTH BY OCTOBER 15", OR WHICH ARE DISTURBED AFTER OCTOBER 15", SHALL BE STABILIZED TEMPORARILY WITH STONE OR IN ACCORDANCE WITH TABLE 1.
      (C) AFTER NOVEMBER 30" INCOMPLETE ROAD SURFACES, WHERE WORK HAS STOPPED FOR THE SEASON, SHALL BE PROTECTED IN ACCORDANCE WITH TABLE 1.
      (D) WINTER EXCAVATION AND EARTHWORK SHALL BE DONE SUCH THAT NO MORE THAN 1 ACRE OF THE PROJECT IS WITHOUT STABILIZATION AT ONE TIME, UNLESS A WINTER CONSTRUCTION PLAN HAS BEEN APPROVED BY NHDOT THAT MEETS THE REQUIREMENTS OF ENV-WQ 1505.02 AND ENV-WQ 1505.05.
      (E) A SWPPP AMENDMENT SHALL BE SUBMITTED TO THE DEPARTMENT, FOR APPROVAL, ADDRESSING COLD WEATHER STABILIZATION (ENV-WQ 1505.05) AND INCLUDING THE REQUIREMENTS OF NO LESS THAN 30 DAYS PRIOR TO THE COMMENCEMENT OF WORK SCHEDULED AFTER NOVEMBER 30".

GENERAL CONSTRUCTION PLANNING AND SELECTION OF STRATEGIES TO CONTROL EROSION AND SEDIMENT ON HIGHWAY CONSTRUCTION PROJECTS

3. PLAN ACTIVITIES TO ACCOUNT FOR SENSITIVE SITE CONDITIONS:
   3.1. CLEARLY FLAG AREAS TO BE PROTECTED IN THE FIELD AND PROVIDE CONSTRUCTION BARRIERS TO PREVENT TRAFFICKING OUTSIDE OF WORK AREAS.
   3.2. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS.
   3.3. PROTECT AND MAXIMIZE EXISTING NATIVE VEGETATION AND NATURAL FOREST BUFFERS BETWEEN CONSTRUCTION ACTIVITY AND SENSITIVE AREAS.
   3.4. WHEN WORK IS PERFORMED IN AND NEAR WATER COURSES, STREAM FLOW DIVERSION METHODS SHALL BE IMPLEMENTED PRIOR TO ANY EXCAVATION OR FILLING.
   3.5. WHEN WORK IS PERFORMED WITHIN 50 FEET OF SURFACE WATERS (WETLAND, OPEN WATER OR FLOWING WATER), PERIMETER CONTROL SHALL BE ENHANCED CONSISTENT WITH SECTION 2.1.2.1. OF THE 2012 NPDES CONSTRUCTION GENERAL PERMIT.

4. MINIMIZE THE AMOUNT OF EXPOSED SOIL:
   4.1. CONSTRUCTION SHALL BE SEQUENCED TO LIMIT THE DURATION AND AREA OF EXPOSED SOILS. MINIMIZE THE AREA OF EXPOSED SOIL AT ANY ONE TIME. PHASING SHALL BE USED TO REDUCE THE AMOUNT AND DURATION OF SOIL EXPOSED TO THE ELEMENTS AND VEHICLE TRACKING.
   4.2. UTILIZE TEMPORARY MULCHING OR PROVIDE ALTERNATE TEMPORARY STABILIZATION ON EXPOSED SOILS IN ACCORDANCE WITH TABLE 1.
   4.3. THE MAXIMUM AMOUNT OF DISTURBED EARTH SHALL NOT EXCEED A TOTAL OF 5 ACRES FROM MAY 1" THROUGH NOVEMBER 30", OR EXCEED ONE ACRE DURING WINTER MONTHS, UNLESS THE CONTRACTOR DEMONSTRATES TO THE DEPARTMENT THAT THE ADDITIONAL AREA OF DISTURBANCE IS NECESSARY TO MEET THE CONTRACTORS CRITICAL PATH METHOD SCHEDULE (CPM), AND THE CONTRACTOR HAS ADEQUATE RESOURCES AVAILABLE TO ENSURE THAT ENVIRONMENTAL COMMITMENTS WILL BE MET.

5. CONTROL STORMWATER FLOWING ONTO AND THROUGH THE PROJECT:
   5.1. DIVERT OFF SITE RUNOFF OR CLEAN WATER AWAY FROM THE CONSTRUCTION ACTIVITY TO REDUCE THE VOLUME THAT NEEDS TO BE TREATED ON SITE.
   5.2. DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM DISTURBED AREAS, SLOPES, AND AROUND ACTIVE WORK AREAS AND TO A STABILIZED OUTLET LOCATION.
   5.3. CONSTRUCT IMPERMEABLE BARRIERS AS NECESSARY TO COLLECT OR DIVERT CONCENTRATED FLOWS FROM WORK OR DISTURBED AREAS.
   5.4. STABILIZE, TO APPROPRIATE ANTICIPATED VELOCITIES, CONVEYANCE CHANNELS OR PUMPING SYSTEMS NEEDED TO CONVEY CONSTRUCTION STORMWATER TO BASINS AND DISCHARGE LOCATIONS PRIOR TO USE.
   5.5. DIVERT OFF-SITE WATER THROUGH THE PROJECT IN AN APPROPRIATE MANNER SO NOT TO DISTURB THE UPSTREAM OR DOWNSTREAM SOILS, VEGETATION OR HYDROLOGY BEYOND THE PERMITTED AREA.

6. PROTECT SLOPES:
   6.1. INTERCEPT AND DIVERT STORM RUNOFF FROM UPSLOPE DRAINAGE AREAS AWAY FROM UNPROTECTED AND NEWLY ESTABLISHED AREAS AND SLOPES TO A STABILIZED OUTLET OR CONVEYANCE.
   6.2. CONSIDER HOW GROUNDWATER SEEPAGE ON CUT SLOPES MAY IMPACT SLOPE STABILITY AND INCORPORATE APPROPRIATE MEASURES TO MINIMIZE EROSION.
   6.3. CONVEY STORMWATER DOWN THE SLOPE IN A STABILIZED CHANNEL OR SLOPE DRAIN.
   6.4. THE OUTER FACE OF THE FILL SLOPE SHOULD BE IN A LOOSE RUFFLED CONDITION PRIOR TO TURF ESTABLISHMENT. TOPSOIL OR HUMUS LAYERS SHALL BE TRACKED UP AND DOWN THE SLOPE, DISKED, HARROWED, DRAGGED WITH A CHAIN OR MAT, MACHINE-RAKED, OR HAND-WORKED TO PRODUCE A RUFFLED SURFACE.

7. ESTABLISH STABILIZED CONSTRUCTION EXITS:
   7.1. INSTALL AND MAINTAIN CONSTRUCTION EXITS, ANYWHERE TRAFFIC LEAVES A CONSTRUCTION SITE ONTO A PUBLIC RIGHT-OF-WAY.
   7.2. SWEEP ALL CONSTRUCTION RELATED DEBRIS AND SOIL FROM THE ADJACENT PAVED ROADWAYS AS NECESSARY.

8. PROTECT STORM DRAIN INLETS:
   8.1. DIVERT SEDIMENT LADEN WATER AWAY FROM INLET STRUCTURES TO THE EXTENT POSSIBLE.
   8.2. INSTALL SEDIMENT BARRIERS AND SEDIMENT TRAPS AT INLETS TO PREVENT SEDIMENT FROM ENTERING THE DRAINAGE SYSTEM.
   8.3. CLEAN CATCH BASINS, DRAINAGE PIPES, AND CULVERTS IF SIGNIFICANT SEDIMENT IS DEPOSITED.
   8.4. DROP INLET SEDIMENT BARRIERS SHOULD NEVER BE USED AS THE PRIMARY MEANS OF SEDIMENT CONTROL AND SHOULD ONLY BE USED TO PROVIDE AN ADDITIONAL LEVEL OF PROTECTION TO STRUCTURES AND DOWN-GRADIENT SENSITIVE RECEPTORS.

9. SOIL STABILIZATION:
   9.1. WITHIN THREE DAYS OF THE LAST ACTIVITY IN AN AREA, ALL EXPOSED SOIL AREAS, WHERE CONSTRUCTION ACTIVITIES ARE COMPLETE, SHALL BE STABILIZED.
   9.2. IN ALL AREAS, TEMPORARY SOIL STABILIZATION MEASURES SHALL BE APPLIED IN ACCORDANCE WITH THE STABILIZATION REQUIREMENTS (SECTION 2.2) OF THE 2012 CGP. (SEE TABLE 1 FOR GUIDANCE ON THE SELECTION OF TEMPORARY SOIL STABILIZATION MEASURES.)
   9.3. EROSION CONTROL SEED MIX SHALL BE SOWN IN ALL INACTIVE CONSTRUCTION AREAS THAT WILL NOT BE PERMANENTLY SEEDED WITHIN TWO WEEKS OF DISTURBANCE AND PRIOR TO SEPTEMBER 15, OF ANY GIVEN YEAR, IN ORDER TO ACHIEVE VEGETATIVE STABILIZATION PRIOR TO THE END OF THE GROWING SEASON.
   9.4. SOIL TACKIFIERS MAY BE APPLIED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS AND REAPPLIED AS NECESSARY TO MINIMIZE SOIL AND MULCH LOSS UNTIL PERMANENT VEGETATION IS ESTABLISHED.

10. RETAIN SEDIMENT ON-SITE AND CONTROL DEWATERING PRACTICES:
   10.1. TEMPORARY SEDIMENT BASINS (CGP-SECTION 2.1.3.2) OR SEDIMENT TRAPS (ENV-WQ 1506.10) SHALL BE SIZED TO RETAIN, ON SITE, THE VOLUME OF A 2-YEAR 24-HOUR STORM EVENT FOR ANY AREA OF DISTURBANCE OR 3,600 CUBIC FEET OF STORMWATER RUNOFF PER ACRE OF DISTURBANCE, WHICHEVER IS GREATER. TEMPORARY SEDIMENT BASINS USED TO TREAT STORMWATER RUNOFF FROM AREAS GREATER THAN 5-ACRES OF DISTURBANCE SHALL BE SIZED TO ALSO CONTROL STORMWATER RUNOFF FROM A 10-YEAR 24 HOUR STORM EVENT. ON-SITE RETENTION OF THE 10-YEAR 24-HOUR EVENT IS NOT REQUIRED.
   10.2. CONSTRUCT AND STABILIZE DEWATERING INFILTRATION BASINS PRIOR TO ANY EXCAVATION THAT MAY REQUIRE DEWATERING.
   10.3. TEMPORARY SEDIMENT BASINS OR TRAPS SHALL BE PLACED AND STABILIZED AT LOCATIONS WHERE CONCENTRATED FLOW (CHANNELS AND PIPES) DISCHARGE TO THE SURROUNDING ENVIRONMENT FROM AREAS OF UNSTABILIZED EARTH DISTURBING ACTIVITIES.

11. ADDITIONAL EROSION AND SEDIMENT CONTROL GENERAL PRACTICES:
   11.1. USE TEMPORARY MULCHING, PERMANENT MULCHING, TEMPORARY VEGETATIVE COVER, AND PERMANENT VEGETATIVE COVER TO REDUCE THE NEED FOR DUST CONTROL. USE MECHANICAL SWEEPERS ON PAVED SURFACES WHERE NECESSARY TO PREVENT DUST BUILDUP. APPLY WATER, OR OTHER DUST INHIBITING AGENTS OR TACKIFIERS, AS APPROVED BY THE NHDES.
   11.2. ALL STOCKPILES SHALL BE CONTAINED WITH TEMPORARY PERIMETER CONTROLS. INACTIVE SOIL STOCKPILES SHOULD BE PROTECTED WITH SOIL STABILIZATION MEASURES (TEMPORARY EROSION CONTROL SEED MIX AND MULCH, SOIL BINDER) OR COVERED WITH ANCHORED TARPS.
   11.3. EROSION AND SEDIMENT CONTROL MEASURES WILL BE INSPECTED IN ACCORDANCE WITH SECTION 645 OF NHDOT SPECIFICATIONS, WEEKLY AND WITHIN 24 HOURS AFTER ANY STORM EVENT GREATER THAN 0.25 IN. OF RAIN PER 24-HOUR PERIOD. EROSION AND SEDIMENT CONTROL MEASURES WILL ALSO BE INSPECTED IN ACCORDANCE WITH THE GUIDANCE MEMO FROM THE NHDES CONTAINED WITHIN THE CONTRACT PROPOSAL AND THE EPA CONSTRUCTION GENERAL PERMIT.
   11.4. THE CONTRACTOR SHOULD UTILIZE STORM DRAIN INLET PROTECTION TO PREVENT SEDIMENT FROM ENTERING A STORM DRAINAGE SYSTEM PRIOR TO THE PERMANENT STABILIZATION OF THE CONTRIBUTING DISTURBED AREA.
   11.5. PERMANENT STABILIZATION MEASURES WILL BE CONSTRUCTED AND MAINTAINED IN LOCATIONS AS SHOWN ON THE CONSTRUCTION PLANS TO STABILIZE AREAS. VEGETATIVE STABILIZATION SHALL NOT BE CONSIDERED PERMANENTLY STABILIZED UNTIL VEGETATIVE GROWTH COVERS AT LEAST 85% OF THE DISTURBED AREA. THE CONTRACTOR SHALL BE RESPONSIBLE FOR EROSION AND SEDIMENT CONTROL FOR ONE YEAR AFTER PROJECT COMPLETION.
   11.6. CATCH BASINS: CARE SHALL BE TAKEN TO ENSURE THAT SEDIMENTS DO NOT ENTER ANY EXISTING CATCH BASINS DURING CONSTRUCTION. THE CONTRACTOR SHALL PLACE TEMPORARY STONE INLET PROTECTION OVER INLETS IN AREAS OF SOIL DISTURBANCE THAT ARE SUBJECT TO SEDIMENT CONTAMINATION.
   11.7. TEMPORARY AND PERMANENT DITCHES SHALL BE CONSTRUCTED, STABILIZED AND MAINTAINED IN A MANNER THAT WILL MINIMIZE SCOUR. TEMPORARY AND PERMANENT DITCHES SHALL BE DIRECTED TO DRAIN TO SEDIMENT BASINS OR STORM WATER COLLECTION AREAS.
   11.8. WINTER EXCAVATION AND EARTHWORK ACTIVITIES NEED TO BE LIMITED IN EXTENT AND DURATION, TO MINIMIZE POTENTIAL EROSION AND SEDIMENTATION IMPACTS. THE AREA OF EXPOSED SOIL SHALL BE LIMITED TO ONE ACRE, OR THAT WHICH CAN BE STABILIZED AT THE END OF EACH DAY UNLESS A WINTER CONSTRUCTION PLAN, DEVELOPED BY A QUALIFIED ENGINEER OR A CPESC SPECIALIST, IS REVIEWED AND APPROVED BY THE DEPARTMENT.
   11.9. CHANNEL PROTECTION MEASURES SHALL BE SUPPLEMENTED WITH PERIMETER CONTROL MEASURES WHEN THE DITCH LINES OCCUR AT THE BOTTOM OF LONG FILL SLOPES. THE PERIMETER CONTROLS SHALL BE INSTALLED ON THE FILL SLOPE TO MINIMIZE THE POTENTIAL FOR FILL SLOPE SEDIMENT DEPOSITS IN THE DITCH LINE.

BEST MANAGEMENT PRACTICES (BMP) BASED ON AMOUNT OF OPEN CONSTRUCTION AREA

12. STRATEGIES SPECIFIC TO OPEN AREAS LESS THAN 5 ACRES:
   12.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500: ALTERATION OF TERRAIN FOR CONSTRUCTION AND USE ALL CONVENTIONAL BMP STRATEGIES.
   12.2. SLOPES STEEPER THAN 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING.
   12.3. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT ALONE.
   12.4. AREAS WHERE HAUL ROADS ARE CONSTRUCTED AND STORMWATER CANNOT BE TREATED THE DEPARTMENT WILL CONSIDER INFILTRATION.
   12.5. FOR HAUL ROADS ADJACENT TO SENSITIVE ENVIRONMENTAL AREAS OR STEEPER THAN 5%, THE DEPARTMENT WILL CONSIDER USING EROSION STONE, CRUSHED GRAVEL, OR CRUSHED STONE BASE TO HELP MINIMIZE EROSION ISSUES.
   12.6. ALL AREAS THAT CAN BE STABILIZED SHALL BE STABILIZED PRIOR TO OPENING UP NEW TERRITORY.
   12.7. DETENTION BASINS SHALL BE DESIGNED AND CONSTRUCTED TO ACCOMMODATE A 2 YEAR STORM EVENT.

13. STRATEGIES SPECIFIC TO OPEN AREAS BETWEEN 5 AND 10 ACRES:
   13.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES WILL BE UTILIZED.
   13.2. DETENTION BASINS WILL BE CONSTRUCTED TO ACCOMMODATE THE 2-YEAR 24-HOUR STORM EVENT AND CONTROL A 10-YEAR 24-HOUR STORM EVENT.
   13.3. SLOPES STEEPER THAN A 3:1 WILL RECEIVE TURF ESTABLISHMENT WITH MATTING OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS. OTHER ALTERNATIVE MEASURES, SUCH AS BONDED FIBER MATRIXES (BFMS) OR FLEXIBLE GROWTH MEDIUMS (FGMS) MAY BE UTILIZED, IF MEETING THE NHDES APPROVALS AND REGULATIONS.
   13.4. SLOPES 3:1 OR FLATTER WILL RECEIVE TURF ESTABLISHMENT OR OTHER TEMPORARY SOIL STABILIZATION MEASURES DETAILED IN TABLE 1. THE CONTRACTOR MAY ALSO CONSIDER A SOIL BINDER IN ACCORDANCE WITH THE NHDES APPROVALS OR REGULATIONS.

14. STRATEGIES SPECIFIC TO OPEN AREAS OVER 10 ACRES:
   14.1. THE CONTRACTOR SHALL COMPLY WITH RSA 485:A:17 AND ENV-WQ 1500 ALTERATION OF TERRAIN AND SHALL USE CONVENTIONAL BMP STRATEGIES AND ALL TREATMENT OPTIONS USED FOR UNDER 5 ACRES AND BETWEEN 5 AND 10 ACRES WILL BE UTILIZED.
   14.2. THE DEPARTMENT ANTICIPATES THAT SOIL BINDERS WILL BE NEEDED ON ALL SLOPES STEEPER THAN 3:1, IN ORDER TO MINIMIZE EROSION AND REDUCE THE AMOUNT OF SEDIMENT IN THE STORMWATER TREATMENT BASINS.
   14.3. THE CONTRACTOR WILL BE REQUIRED TO HAVE AN APPROVED DESIGN IN ACCORDANCE WITH ENV-WQ 1506.12 FOR AN ACTIVE FLOCCULANT TREATMENT SYSTEM TO TREAT AND RELEASE WATER CAPTURED IN STORM WATER BASINS. THE CONTRACTOR SHALL ALSO RETAIN THE SERVICES OF AN ENVIRONMENTAL CONSULTANT WHO HAS DEMONSTRATED EXPERIENCE IN THE DESIGN OF FLOCCULANT TREATMENT SYSTEMS. THE CONSULTANT WILL ALSO BE RESPONSIBLE FOR THE IMPLEMENTATION AND MONITORING OF THE SYSTEM.

TABLE 1
GUIDANCE ON SELECTING TEMPORARY SOIL STABILIZATION MEASURES

APPLICATION AREAS	DRY MULCH METHODS				HYDRAULICALLY APPLIED MULCHES[2]				ROLLED EROSION CONTROL BLANKETS[3]			
	HMT	WC	SG	CB	HM	SMM	BFM	FRM	SNSB	DNSB	DNSCB	DNCB
SLOPES[1]												
STEEPER THAN 2:1	NO	NO	YES	NO	NO	NO	NO	YES	NO	NO	NO	YES
2:1 SLOPE	YES'	YES'	YES	YES	NO	NO	YES	YES	NO	YES	YES	YES
3:1 SLOPE	YES	YES	YES	YES	NO	YES	YES	YES	YES	YES	YES	NO
4:1 SLOPE	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	NO	NO
WINTER STABILIZATION	4T/AC	YES	YES	YES	NO	NO	YES	YES	YES	YES	YES	YES
CHANNELS												
LOW FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES
HIGH FLOW CHANNELS	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES

ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE	ABBREV.	STABILIZATION MEASURE
HMT	HAY MULCH & TACK	HM	HYDRAULIC MULCH	SNSB	SINGLE NET STRAW BLANKET
WC	WOOD CHIPS	SMM	STABILIZED MULCH MATRIX	DNSB	DOUBLE NET STRAW BLANKET
SG	STUMP GRINDINGS	BFM	BONDED FIBER MATRIX	DNSCB	2 NET STRAW-COCONUT BLANKET
CB	COMPOST BLANKET	FRM	FIBER REINFORCED MEDIUM	DNCB	2 NET COCONUT BLANKET

NOTES:
1. ALL SLOPE STABILIZATION OPTIONS ASSUME A SLOPE LENGTH ≤10 TIMES THE HORIZONTAL DISTANCE COMPONENT OF THE SLOPE, IN FEET.
2. PRODUCTS CONTAINING POLYACRYLAMIDE (PAM) SHALL NOT BE APPLIED DIRECTLY TO OR WITHIN 100 FEET OF ANY SURFACE WATER WITHOUT PRIOR WRITTEN APPROVAL FROM THE NH DEPARTMENT OF ENVIRONMENTAL SERVICES.
3. ALL EROSION CONTROL BLANKETS SHALL BE MADE WITH WILDLIFE FRIENDLY BIODEGRADABLE NETTING.

FOR CONSTRUCTION AND ALLIGNMENT DETAILS SEE CONSTRUCTION PLANS

STATE OF NEW HAMPSHIRE
TOWN OF DOVER

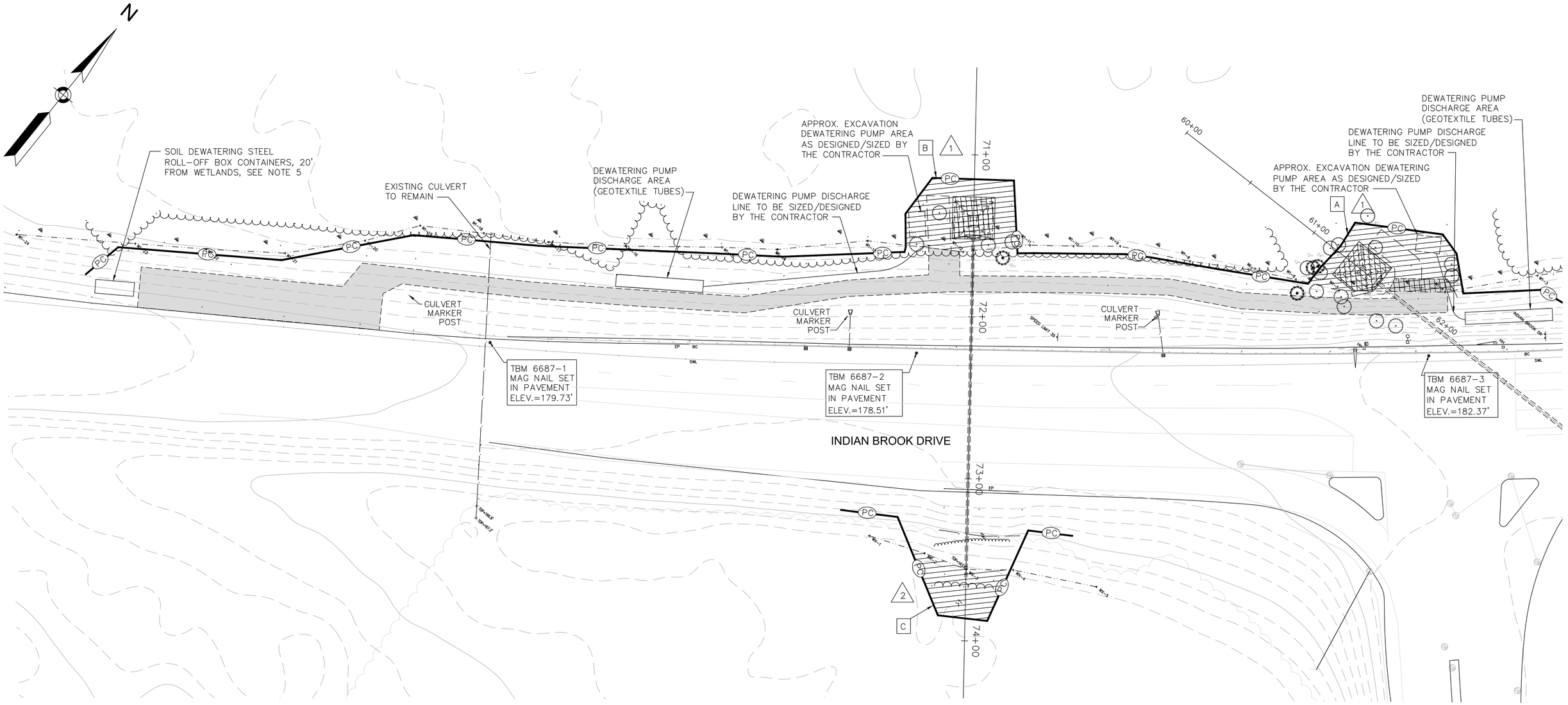
DEPARTMENT OF TRANSPORTATION ○ BUREAU OF TURNPIKES

EROSION CONTROL STRATEGIES

AECOM
1155 ELM ST. SUITE 401
MANCHESTER, NH 03101

DGN	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042SYMB.dgn	40042	8	9

DATE 10/22/21



PLAN

HOR. SCALE IN FEET

30 0 30 60

NOTES:

1. IT IS INTENDED THAT ONLY ONE CULVERT OUTLET BASIN EXCAVATION AND DEWATERING OPERATION WILL OCCUR AT ANY TIME.
2. ALL DEWATERING OF EXCAVATED SOILS AND DISCHARGES FROM EXCAVATION DEWATERING PUMPS SHALL TAKE PLACE OUTSIDE OF THE WETLANDS RESOURCE AREAS.
3. ALL TEMPORARY WETLAND IMPACT AREAS SHALL BE RESTORED TO ORIGINAL GRADE CONTOURS AND RESEEDED WITH NHDOT SPECIFIED WETLAND SEED MIX.
4. THE AREA OF THE GRAVEL CONSTRUCTION ACCESS PATH OUTSIDE OF THE WETLANDS DELINEATION SHALL REMAIN FOR FUTURE MAINTENANCE USE AND SHALL BE STABILIZED WITH ITEM 646.51 TURF ESTABLISHMENT WITH MULCH AND TACKIFIERS AND LOAM, AS DIRECTED BY THE ENGINEER.
5. EXCAVATED MUCK SHALL FOLLOW THE SOIL MANAGEMENT PLAN AND USE BEST MANAGEMENT PRACTICES. EXCAVATED MUCK CONTAINING INVASIVE SPECIES SHALL BE DRAINED OUTSIDE ANY JURISDICTIONAL AREA AND BE BURIED ON-SITE A MINIMUM OF 3' BELOW TOPSOIL OR STOCKPILED ON AN IMPERVIOUS SURFACE UNTIL VIABLE MATERIAL IS DESTROYED AND TAKEN OFF-SITE AT THE CONTRACTORS DISCRETION, ENSURING THEY ARE NOT PLACED BACK IN THE WETLAND.
6. LIMITED REUSE SOILS(LRS) WITHIN THE ROW THAT IS EXCAVATED SHALL REMAIN ON NHDOT-OWNED-PROPERTY AND OUT OF JURISDICTIONAL AREA.

FOR CONSTRUCTION AND ALIGNMENT DETAILS SEE CONSTRUCTION PLANS

STATE OF NEW HAMPSHIRE
TOWN OF DOVER
DEPARTMENT OF TRANSPORTATION ◦ BUREAU OF TURNPIKES

EROSION CONTROL PLAN

AECOM
1155 ELM ST. SUITE 401
MANCHESTER, NH 03101

DATE 10/22/21

DWG	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
40042wetplan.dwg	40042	9	9

AECOM Imagine it. Delivered.

New Hampshire Department of Transportation
Bureau of Turnpikes
Statewide On-Call Turnpike System Services 41359
Task Order #7 / AECOM Project # 60644662

Eastern Turnpike Drainage Project - SADES Culvert No. 73-XXX (unknown #) Repair: Bog Priority Resource Area Separation Report

May-2021

AECOM
1155 Elm St - Suite 401
Manchester, NH 03101
(603)-606-4800

New Hampshire DOT Department of Transportation

AECOM

On April 28, 2021, AECOM's Certified Wetland Scientist performed a site visit at NHDOT SADES Culvert #73-XXX (unnamed culvert) outlet located off of the northern shoulder of Indian Brook Drive just west of the Spaulding Turnpike Exit # 9 Interchange near Mile Marker 12.3 in Dover, New Hampshire. The purpose of the site visit was to determine if the wetland area within the limits of work associated with project activities for that culvert qualified as a "peatland bog" as mapped by NH DES Priority Resource Area (PRA) mapping. A PRA is an area protected under the NH Wetlands Law RSA 482-A. Figure 1 below shows the mapped PRA in relation to the culvert location. The proposed culvert outlet repair limits of work are located near the edge of the PRA.

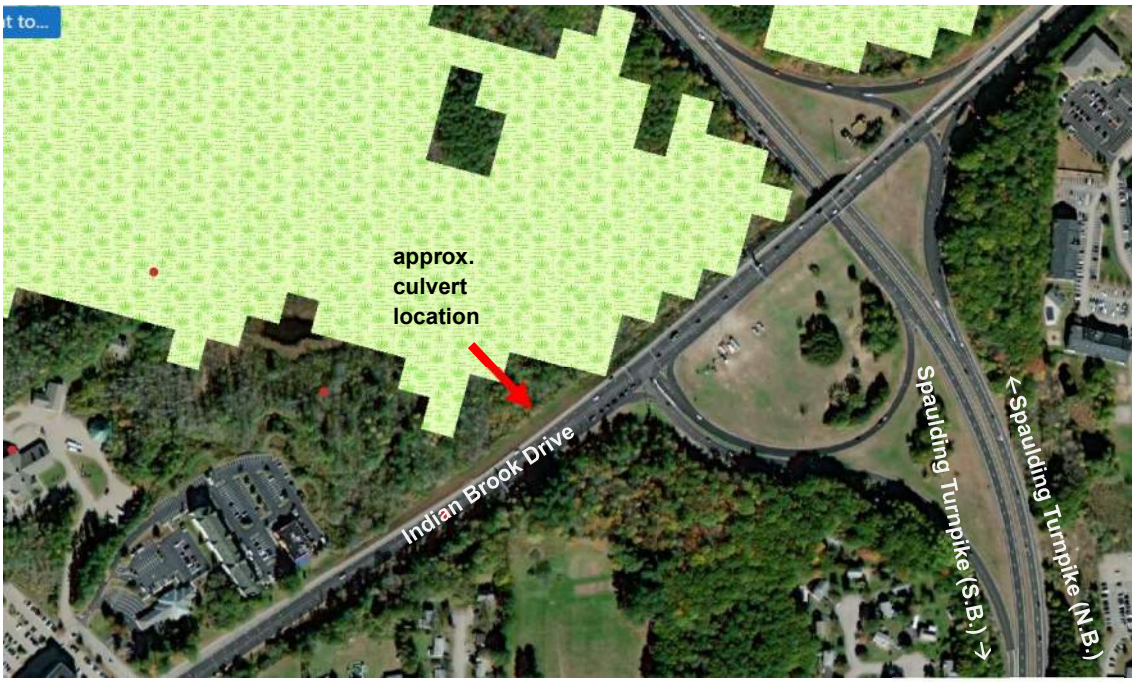


Figure 1. Mapped NH DES Priority Resource Area (peatlands) in the vicinity of Culvert #73021.

(Source: https://nhdeswppt.unh.edu/Html5Viewer/index.html?viewer=WPPT.gvh)

A "bog" is described at Env-Wt 102.30 as "a wetland distinguished by stunted evergreen trees and shrubs, peat deposits, poor drainage, highly acidic soil conditions, highly acidic water conditions, or any combination thereof, as determined using "Natural Communities of New Hampshire", 2nd edition, published by UNH Cooperative Extension dated 2011". The *Natural Communities of New Hampshire* publication includes many types of open peatlands (including bogs).

Open peatlands are categorized in two major groups:

1) bogs and poor fens
2) medium and rich fens

This division is primarily based on relative nutrient availability for plants which is related to water pH in the wetland. The numerous types of open peatlands within each of these two categories include the following:

Bogs and poor fens

Moss and moss-sedge carpets
- *Sphagnum rubellum* - small cranberry moss carpet
- Liverwort - horned bladderwort fen
- Large cranberry - short sedge moss lawn
- Bog rosemary - sedge fen
- Montane level fen/bog
- Subalpine sloping fen

Dwarf heath shrub bogs
- Leatherleaf - sheep laurel shrub bog
- Leatherleaf - black spruce bog
- Alpine/subalpine bog
- Wooded subalpine bog/heath snowbank

Tall shrub poor fens
- Highbush blueberry - mountain holly wooded fen
- Mountain holly - black spruce wooded fen

Medium and rich fens

Level sedge, shrub, and shrub-sedge fens
- Sweet gale - meadowsweet - tussock sedge fen
- Wire sedge - sweet gale fen
- Water willow - *Sphagnum* fen

Sloping graminoid and shrub fens
- Montane sloping fen
- Calcareous sedge - moss fen
- Northern white cedar circumneutral string
- Circumneutral - calcareous flark

Level to sloping wooded fens
- Winterberry - cinnamon fern wooded fen
- Sweet pepperbush wooded fen
- Highbush blueberry - sweet gale - meadowsweet shrub thicket
- Alder - lake sedge intermediate fen
- Alder wooded fen
- Montane alder - heath shrub thicket

Marshy communities of peatland margins
- Floating marshy peat mat
- Marshy moat

The following is an example photo of one type of bog as provided in the NH DES Environmental Fact Sheet for “Wetlands Permitting: Priority Resource Area” (WB-25):

Figure 2. Example photo of a bog as provided by NH DES

(Source: https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/wb-25.pdf)

Using the existing wetland flags in the vicinity of the culvert (wetland flags W1-11, W1-12, and W1-13) and a tape reel, the approximate limits of proposed work were flagged as they extended into the wetland area adjacent to the culvert using blue and white striped flagging tape. Once the general limits of work were established, the vegetative community, soils, and hydrology within the limits of work were assessed and data was collected using a US Army Corps of Engineers Wetland Determination Data Form (Northcentral and Northeast Region – Version 2.0) as attached to this report. The data sheet plot was located approximately 12 feet north of the culvert opening approximately halfway between the eastern and western boundaries of the limits of work.

The limits of work are generally surrounded by a Palustrine Forested Wetland (PFO) dominated by red maple (*Acer rubrum*) and white pine (*Pinus strobus*) with lesser

amounts of grey birch (*Betula populifolia*) in the tree stratum. Winterberry (*Ilex verticillata*) and highbush blueberry (*Vaccinium corymbosum*) were dominant in the sapling/shrub stratum with lesser amounts of speckled alder (*Alnus incana*) and meadowsweet (*Spiraea alba*). The interior portion of the limits of work in the vicinity of the culvert discharge opening was a Palustrine Emergent Marsh (PEM) dominated by tussock sedge (*Carex stricta*), with lesser amounts of wide-leaved cattail (*Typha latifolia*), jewelweed (*Impatiens capensis*) and sensitive fern (*Onoclea sensibilis*).

Figure 3 below shows the proposed limits of work as a wide-view panoramic photo. Additional photos within the limits of work are also provided below.

Figure 3. Panoramic view of the proposed limits of work for Culvert #73-XXX (unnamed culvert).

Figure 4. Representative view of the plant community within the proposed limits of work for Culvert #73-XXX.

Figure 5. Discharge location of Culvert #73-XXX at toe of slope north of Indian Brook Drive.

Figure 6. US Army Corps wetland data sheet plot located within the limits of work (culvert discharge is located to the left of the photo field of view).

The wetland within the limits of work lacks the typical vegetative species that are dominant in bogs and other peatlands as described in the *Natural Communities of New Hampshire* publication and summarized above. In addition, the wetland also

lacks the organic soils that are typical of peatlands. Therefore, the wetland within the limits of work for the proposed project is not considered a “bog” or “open peatland”.

Prepared by:

Thomas J. Touchet
Senior Wetland Scientist, PWS #1643

Thomas J. Touchet
Senior Wetland Scientist, MS, PWS
FAA Certified Commercial UAS Pilot
Direct +1-978-905-3219
Fax +1-978-905-2101
Mobile +1-781-799-8649
tom.touchet@aecom.com

John G. Goudreault, P.E.
Associate Vice President
Senior Project Manager
D +1-603-606-4813
M +1-603-661-8224
john.goudreault@aecom.com

AECOM
1155 Elm Street, Suite 401
Manchester, NH 03101, USA
T +1-603-606-4800
aecom.com
Built to deliver a better world

Attachment:

USACE WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TO#7 - Eastern Tpk Drainage Project – Culverts Repair City/County: Dover/Strafford Co. Sampling Date: 4/28/2021

Applicant/Owner: NHDOT State: NH Sampling Point: W1-WET2

Investigator(s): T. Touchet, PWS (AECOM) Section, Township, Range:

Landform (hillside, terrace, etc.): wetland bottom near toe of slope Local relief (concave, convex, none): flat Slope %: <1%

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 43.21666 N Long: 70.89748 W Datum: WGS 84

Soil Map Unit Name: Hinckley loamy sand, 3 to 8 percent slopes (HaB) NWI classification: PEM/PFO

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID:

Remarks: (Explain alternative procedures here or in a separate report.)
Plot center is located approximately 12' north of the 73-XXX downstream culvert opening near wetland flag W1-12.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- ____ Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- ____ Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No ____	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 1
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Standing water associated with the culvert discharge opening is located approximately 6' feet from the center of the plot (just beyond the 5' herbaceous plot radius)

VEGETATION – Use scientific names of plants.

Sampling Point: W1-WET2

Tree Stratum (Plot size: 30' x 40')	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	30	Yes	FAC
2. *Pinus strobus*	30	Yes	FACU
3. *Betula populifolia*	10	No	FAC
4.			
5.			
6.			
7.			
	70	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Vaccinium corymbosum*	10	Yes	FACW
2. *Ilex verticillata*	15	Yes	FACW
3. *Alnus incana*	5	No	FACW
4. *Spiraea alba*	1	No	FACW
5.			
6.			
7.			
	31	=Total Cover	
Herb Stratum (Plot size: 5' radius)			
1. *Carex striata*	60	Yes	OBL
2. *Typha latifolia*	15	No	OBL
3. *Impatiens capensis*	20	No	FACW
4. *Onoclea sensibilis*	15	No	FACW
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	110	=Total Cover	
Woody Vine Stratum (Plot size: 30' x 40')			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 80.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	75	x 1 =	75
FACW species	66	x 2 =	132
FAC species	40	x 3 =	120
FACU species	30	x 4 =	120
UPL species	0	x 5 =	0
Column Totals:	211 (A)		447 (B)

Prevalence Index = B/A = 2.12

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)
Tree and vine plot shapes were altered to accommodate the shape of the limits of work

SOIL

Sampling Point: W1-WET2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-4	10YR 2/2	100					Mucky Loam/Clay	
4-10	10YR 4/2	85	7.5YR 4/6	15	C	M	Loamy/Clayey	Prominent redox concentrations
10-16	2.5Y 4/2	100					Sandy	loamy sand

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

This data form is revised from Northcentral and Northeast Regional Supplement Version 2.0 to include the NRCS Field Indicators of Hydric Soils, Version 7.0, 2015 Errata. (http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_051293.docx)

AECOM Imagine it. Delivered.

New Hampshire Department of Transportation
Bureau of Turnpikes
Statewide On-Call Turnpike System Services 41359
Task Order #7 / AECOM Project # 60644662

Eastern Turnpike Drainage Project - SADES Culvert No. 73021 Repair: Bog Priority Resource Area Separation Report

May-2021

AECOM
1155 Elm St - Suite 401
Manchester, NH 03101
(603)-606-4800

New Hampshire DOT Department of Transportation

AECOM

On April 28, 2021, AECOM's Certified Wetland Scientist performed a site visit at NHDOT SADES Culvert #73021 outlet located off of the northern shoulder of Indian Brook Road just west of the Spaulding Turnpike Exit # 9 Interchange near Mile Marker 12.3 in Dover, New Hampshire. The purpose of the site visit was to determine if the wetland area within the limits of work associated with project activities for that culvert qualified as a "peatland bog" as mapped by NH DES Priority Resource Area (PRA) mapping. A PRA is an area protected under the NH Wetlands Law RSA 482-A. Figure 1 below shows the mapped PRA in relation to the culvert location. The proposed culvert outlet repair limits of work are located near the edge of the PRA.

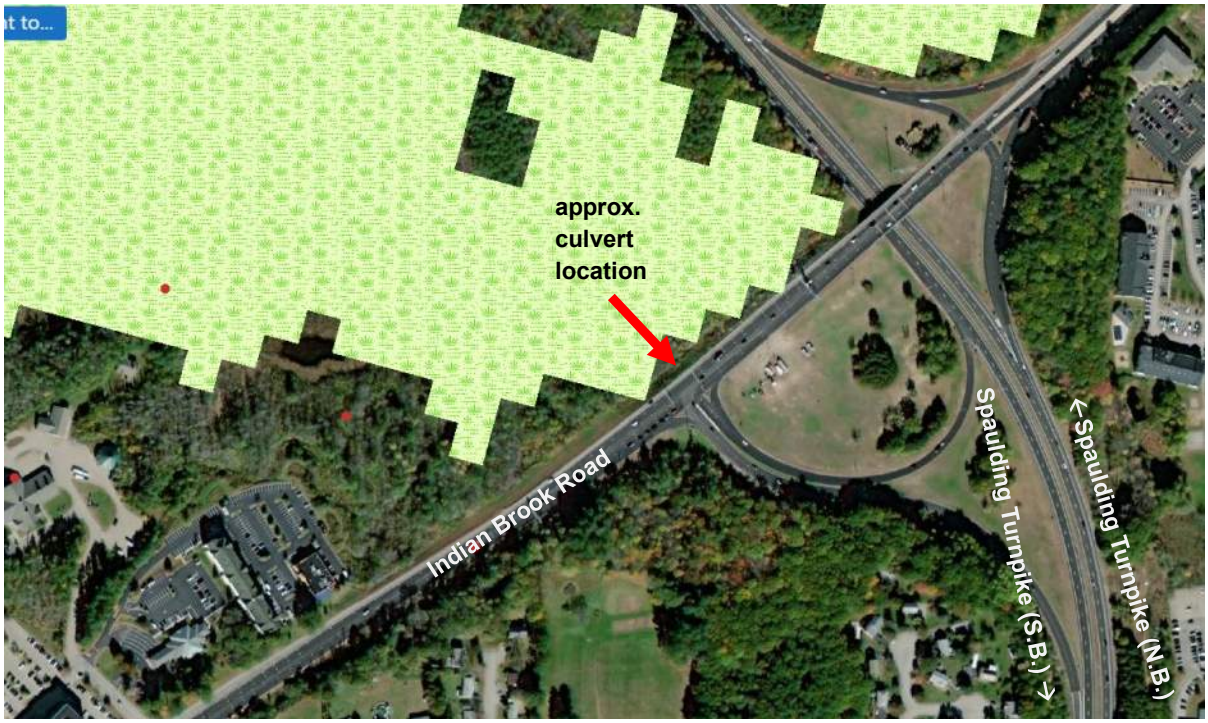


Figure 1. Mapped NH DES Priority Resource Area (peatlands) in the vicinity of Culvert #73021.

(Source: https://nhdeswppt.unh.edu/Html5Viewer/index.html?viewer=WPPT.gvh)

A "bog" is described at Env-Wt 102.30 as "a wetland distinguished by stunted evergreen trees and shrubs, peat deposits, poor drainage, highly acidic soil conditions, highly acidic water conditions, or any combination thereof, as determined using "Natural Communities of New Hampshire", 2nd edition, published by UNH Cooperative Extension dated 2011". The *Natural Communities of New Hampshire* publication includes many types of open peatlands (including bogs).

Open peatlands are categorized in two major groups:

1) bogs and poor fens
2) medium and rich fens

This division is primarily based on relative nutrient availability for plants which is related to water pH in the wetland. The numerous types of open peatlands within each of these two categories include the following:

Bogs and poor fens

Moss and moss-sedge carpets
- *Sphagnum rubellum* - small cranberry moss carpet
- Liverwort - horned bladderwort fen
- Large cranberry - short sedge moss lawn
- Bog rosemary - sedge fen
- Montane level fen/bog
- Subalpine sloping fen

Dwarf heath shrub bogs
- Leatherleaf - sheep laurel shrub bog
- Leatherleaf - black spruce bog
- Alpine/subalpine bog
- Wooded subalpine bog/heath snowbank

Tall shrub poor fens
- Highbush blueberry - mountain holly wooded fen
- Mountain holly - black spruce wooded fen

Medium and rich fens

Level sedge, shrub, and shrub-sedge fens
- Sweet gale - meadowsweet - tussock sedge fen
- Wire sedge - sweet gale fen
- Water willow - *Sphagnum* fen

Sloping graminoid and shrub fens
- Montane sloping fen
- Calcareous sedge - moss fen
- Northern white cedar circumneutral string
- Circumneutral - calcareous flark

Level to sloping wooded fens
- Winterberry - cinnamon fern wooded fen
- Sweet pepperbush wooded fen
- Highbush blueberry - sweet gale - meadowsweet shrub thicket
- Alder - lake sedge intermediate fen
- Alder wooded fen
- Montane alder - heath shrub thicket

Marshy communities of peatland margins
- Floating marshy peat mat
- Marshy moat

The following is an example photo of one type of bog as provided in the NH DES Environmental Fact Sheet for “Wetlands Permitting: Priority Resource Area” (WB-25):

Figure 2. Example photo of a bog as provided by NH DES

(Source: https://www.des.nh.gov/sites/g/files/ehbemt341/files/documents/2020-01/wb-25.pdf)

Using the existing wetland flags in the vicinity of the culvert (wetland flags W1-3, W1-4, and W1-5) and a tape reel, the approximate limits of proposed work were flagged as they extended into the wetland area adjacent to the culvert using blue and white striped flagging tape. Once the general limits of work were established, the vegetative community, soils, and hydrology within the limits of work were assessed and data was collected using a US Army Corps of Engineers Wetland Determination Data Form (Northcentral and Northeast Region – Version 2.0) as attached to this report. The data sheet plot was located approximately 33 feet north of the wetland line approximately halfway between the eastern and western boundaries of the limits of work.

The limits of work are dominated by a phragmites community (*Phragmites australis*) with nearly 100 percent coverage. In addition to phragmites, sparse shrubs and

saplings were observed amongst the phragmites in the interior of the limits of work and included highbush blueberry (*Vaccinium corymbosum*), winterberry (*Ilex verticillata*), glossy buckthorn (*Frangula alnus*), and red maple (*Acer rubrum*). A few larger red maples and white pines (*Pinus strobus*) were observed near the limits of work closer to the wetland line. Figure 3 below shows the proposed limits of work as a 160-degree panoramic photo. Additional photos within the limits of work are also provided below.

Figure 3. Panoramic view of the proposed limits of work for Culvert #73021.

Figure 4. Phragmites-dominated plant community within of the proposed limits of work for Culvert #73021.

Figure 5. Discharge location of Culvert #73021 at toe of slope north of Indian Brook Road.

Figure 6. US Army Corps wetland data sheet plot location in the approximate center of the limits of work.

As observed in Figure 5, water within the wetland appears to be rich in iron as evidenced by the orange colored iron plaque (ferric hydroxide precipitates; 2.5 YR 3/6 in color) likely caused by iron-oxidizing bacteria. Soils were a 2.5 YR 3/2 histosol generally comprised of hemic organic material, likely from years of deposition and

decomposition of phragmites stems. While pH of the water was not assessed at the time, the wetland within the limits of work lacks the typical vegetative species that are dominant in bogs and other peatlands as described in the *Natural Communities of New Hampshire* publication and summarized above. Therefore, the wetland within the limits of work for the proposed project is not considered a “bog” or “open peatland”.

Prepared by:

Thomas J. Touchet
Senior Wetland Scientist, PWS

Thomas J. Touchet
Senior Wetland Scientist, MS, PWS
FAA Certified Commercial UAS Pilot
Direct +1-978-905-3219
Fax +1-978-905-2101
Mobile +1-781-799-8649
tom.touchet@aecom.com

John G. Goudreault, P.E.
Associate Vice President
Senior Project Manager
D +1-603-606-4813
M +1-603-661-8224
john.goudreault@aecom.com

AECOM
1155 Elm Street, Suite 401
Manchester, NH 03101, USA
T +1-603-606-4800
aecom.com
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Attachment:

USACE WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

WETLAND DETERMINATION DATA FORM – Northcentral and Northeast Region

Project/Site: TO#7 - Eastern Tpk Drainage Project – Culverts Repair City/County: Dover/Strafford Co. Sampling Date: 4/28/2021

Applicant/Owner: NHDOT State: NH Sampling Point: W1-WET1

Investigator(s): T. Touchet, PWS (AECOM) Section, Township, Range:

Landform (hillside, terrace, etc.): wetland bottom near toe of slope Local relief (concave, convex, none): flat Slope %: <1%

Subregion (LRR or MLRA): LRR R, MLRA 144A Lat: 43.217082 N Long: 70.896676 W Datum: WGS 84

Soil Map Unit Name: Swanton fine sandy loam, 3 to 8 percent slopes (SwB) NWI classification: PEM

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area**
Hydric Soil Present?	Yes X	No ____	**within a Wetland?** **Yes** X **No** ____
Wetland Hydrology Present?	Yes X	No ____	If yes, optional Wetland Site ID: ____

Remarks: (Explain alternative procedures here or in a separate report.)
The plot is located approximately 33 feet north of the wetland line, approximately centered between the western and eastern limits of work. The surface substrate is a mat of phragmites stems in various stages of decomposition.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ____ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ____ Water Marks (B1)
- ____ Sediment Deposits (B2)
- ____ Drift Deposits (B3)
- ____ Algal Mat or Crust (B4)
- ____ Iron Deposits (B5)
- ____ Inundation Visible on Aerial Imagery (B7)
- ____ Sparsely Vegetated Concave Surface (B8)
- X Water-Stained Leaves (B9)
- ____ Aquatic Fauna (B13)
- ____ Marl Deposits (B15)
- ____ Hydrogen Sulfide Odor (C1)
- ____ Oxidized Rhizospheres on Living Roots (C3)
- ____ Presence of Reduced Iron (C4)
- ____ Recent Iron Reduction in Tilled Soils (C6)
- ____ Thin Muck Surface (C7)
- ____ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ____ Surface Soil Cracks (B6)
- ____ Drainage Patterns (B10)
- ____ Moss Trim Lines (B16)
- ____ Dry-Season Water Table (C2)
- ____ Crayfish Burrows (C8)
- ____ Saturation Visible on Aerial Imagery (C9)
- ____ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ____ Shallow Aquitard (D3)
- ____ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____	No X	Depth (inches): ____
Water Table Present?	Yes X	No ____	Depth (inches): 0.5
Saturation Present? (includes capillary fringe)	Yes X	No ____	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Surface water is present in bootprints after walking in the plot area.

VEGETATION – Use scientific names of plants.

Sampling Point: W1-WET1

Tree Stratum (Plot size: 30' radius)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer rubrum*	10	Yes	FAC
2.			
3.			
4.			
5.			
6.			
7.			
	10	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15' radius)			
1. *Ilex verticillata*	15	Yes	FACW
2. *Vaccinium corymbosum*	10	Yes	FACW
3. *Frangula alnus*	1	No	FAC
4.			
5.			
6.			
7.			
	26	=Total Cover	
Herb Stratum (Plot size: 10' radius)			
1. *Phragmites australis*	100	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	100	=Total Cover	
Woody Vine Stratum (Plot size: 30' radius)			
1.			
2.			
3.			
4.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	125	x 2 =	250
FAC species	11	x 3 =	33
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	136 (A)		283 (B)

Prevalence Index = B/A = 2.08

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub – Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines – All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? **Yes** X **No** ___

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: W1-WET1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-20	2.5YR 3/2	100					Mucky Peat	generally hemic texture

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- X Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Polyvalue Below Surface (S8) (**LRR R, MLRA 149B**)
- ___ Thin Dark Surface (S9) (**LRR R, MLRA 149B**)
- ___ High Chroma Sands (S11) (**LRR K, L)**
- ___ Loamy Mucky Mineral (F1) (**LRR K, L**)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)
- ___ Marl (F10) (**LRR K, L**)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) (**LRR K, L, MLRA 149B**)
- ___ Coast Prairie Redox (A16) (**LRR K, L, R**)
- ___ 5 cm Mucky Peat or Peat (S3) (**LRR K, L, R**)
- ___ Polyvalue Below Surface (S8) (**LRR K, L**)
- ___ Thin Dark Surface (S9) (**LRR K, L**)
- ___ Iron-Manganese Masses (F12) (**LRR K, L, R**)
- ___ Piedmont Floodplain Soils (F19) (**MLRA 149B**)
- ___ Mesic Spodic (TA6) (**MLRA 144A, 145, 149B**)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Groundwater contained high amounts of iron and soil displayed iron plaque (reddish-orange slime), likely ferric hydroxide precipitates.

Dover Drainage Repair, DOT Project #40042

October 22, 2021

A letter from the NH Department of Transportation was sent to the City of Dover, to include the Conservation Commission, on September 14, 2021. To date, no response has been received from the city, to include the Conservation Commission.

Arin Mills
Bureau of Environment
NHDOT